Julien YVONNET
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RESEARCH INTERESTS

Numerical modeling of complex materials, computational homogenization, multiscale methods for solid materials, fracture and interface modeling, nanomechanics, forming processes simulation, numerical methods.

EDUCATION

2009	Habilitation à Diriger des Recherches[1] (H.D.R)	Mechanics	University Paris-Est, France
2004	**Ph.D. thesis**	**Mechanical Engineering**	**ENSAM[2] Paris, France**
2002	M.S.	Mechanical Engineering	ENSAM Paris, France
2001	Agregation[3]	Mechanical Engineering	Ecole Normale Supérieure, Cachan, France
2000	B.S. (eq.)	Mechanics and technologies	Ecole Normale Supérieure, Cachan - University Paris VI, France

ACADEMIC EXPERIENCE

2020-	Deputy head of the Multiscale Modelling and Simulation Laboratory (MSME), Université Gustave Eiffel, France
2014-2019	Head of the Mechanical Group of the Multiscale Modelling and Simualtion Laboratory (MSME), Université Paris-Est Marne-la-Vallée, France

[1] H.D.R. is the highest academic qualification in France, mandatory to be an independent PhD advisor and to reach full professorship.
[2] Ecole Nationale Supérieure des Arts et Métiers.
[3] Agregation is a French national competition for positions in the public education system.

2010-	**Full Professor**, Université Paris-Est Marne-la-Vallée, France
2005-2010	**Associate professor**, Université Paris-Est Marne-la-Vallée, France
2003-2005	Temporary professor, ENSAM Paris, France
2002-2003	Temporary lecturer, ENSAM Paris, France
	Temporary lecturer, Université Marne-la-Vallée, France

HONORS AND AWARDS

- IACM 2018 John Argyris Award for young scientists (The International Association for Computational Mechanics)
- ECCOMAS 2014 O.C. Zienkiewicz award (The European Community on Computational Methods in Applied Sciences
- Fellow of the French University Institute (Institut Universitaire de France, IUF), Junior member, associated with a 5-years research grant) (2013)

AWARDS OBTAINED BY PhD STUDENTS

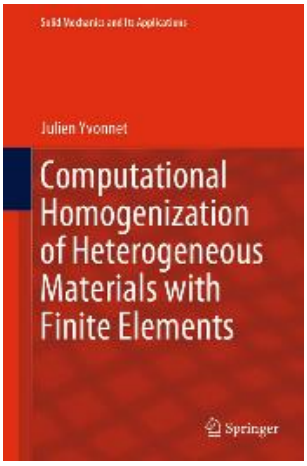
- S. Nezamabadi, Best PhD award from the French Association of Computational Mechanics (CSMA), 2009
- T.T. Nguyen, Best PhD award from the French Association of Computational Mechanics (CSMA), 2015
- D. Da, Melosh Competition finalist for best PhD award, 2019

SUMMARY OF SCIENTIFIC ACTIVITIES

- **114** articles in peer-reviewed journals including: Computer Methods in Applied Mechanics, International Journal for Numerical Methods in Engineering, Journal of the Mechanics and Physics of Solids, Journal of Applied Physics, Nanotechnology, Composite Science and Technology, Journal of Computational Physics, International Journal of Solids and Structures, Mechanics of Materials, MRS Bulletin, Journal of Applied Mechanics, etc. (see the complete list of publications).
- Citations (September 2025)
  Web of Science: **4836** h-index = **38**
  Google Citations: **7553**, h-index = **47**
- **1** Monograph
- **9** book chapters
- **182** communications in national and international conferences
- **6** plenary conferences in international or national conferences
- **2** semi-plenary conference in an international conference
- Involved in the organization of **38** international conferences and local scientific events
- Member of the editorial board of **11** international journals
- **14** visiting positions (China, Singapore, USA, Spain, Greece)
- **21** funded contracts as PI or co –PI.
- **28** advised PhD theses including **24** defended, **8** post-doctoral fellows and **18** master students advised

MONOGRAPH

[1] J. Yvonnet, **Computational Homogenization of Heterogeneous Materials with Finite Elements**, Springer, 2019 ISBN: 978-3-030-18382-0.



CURRENT RESEARCH ACTIVITIES

My current activities deal with **multiscale modelling of solid materials**, including linear and nonlinear, multi-physics behaviors, with gradient effects, using computational approaches. The methods involve in particular the **modelling of cracks in heterogeneous materials** and their effect on the effective behavior of the material. Applications are related to civil engineering materials, composites and energy harvesting systems.

RESEARCH ACHIEVEMENTS

- A first major achievement is the development of **numerical multiscale (homogenization) methods** to study **nonlinear, multiphysics and time-dependent heterogeneous materials**. Over the last years, I have introduced several innovative strategies to make these approaches computationally tractable using **model reduction** and **Data-driven/Artificial Intelligence tools** (neural networks, unsupervised machine learning, clustering).
- Another strong achievement is the development of fracture simulation in complex microstructures of materials. My group has pioneered the use of the phase field method to **fracture** in experimental, realistic, **image-based models of materials**. I have developed many modelling and computational extensions of these fracture simulation methods for different classes of applications including civil engineering, composites or 3D printed materials, taking into account interface fracture, stochastic microstructures and process-induced fracture anisotropy as found in 3D printed parts.
- Finally, I have also conducted with my group pioneering works on the design of fracture-resistant materials by **combining topology optimization and fracture simulation** methods in heterogeneous materials.
- Other very recent and promising developments include innovative methods based on harmonic approaches to construct **multiscale models of mechanical damage**.
- These scientific advanced have been conducted both through academic and aerospace/naval industry/energy industrial collaborations (Safran, EDF, CEA, ONERA, Naval Group, WeAre Aerospace).

PAPERS IN REFERRED JOURNALS

[114] J. Yvonnet, Qi-Chang He, Microstructure-based machine learning of damage models including anisotropy, irreversibility and evolution, **Journal of the Mechanics and Physics of Solids**, 106160, 2025.
[113] Z. Chafia, J. Yvonnet, J. Bleyer, Bridging overlapping coarse and fine meshes within the phase field fracture method, **International Journal for Numerical Methods in Engineering**, 126(9), e70043, 2025
[112] X. Chen,J. Yvonnet, S. Yao, J. Hu, Y. Huang, Strong C1-coupling Multi-Patch Isogeometric Topology Optimization of Complex Structures for Strain Gradient Problems, **International Journal of Solids and Structures**, 113256 , 2025.
[111] Z. Chafia, J. Yvonnet, J. Bleyer, A Data-Driven-based homogenization method to simulate the anisotropic damage of quasi-brittle heterogeneous structures, **Computer Methods in Applied Mechanics and Engineering**, 437: 117747, 2025.
[110] A. Ketata, J. Yvonnet, N. Feld, F. Detrez, A. Parret-Freaud, Structural zoom for linear composite materials based on adaptive mesh and homogenization, **Meccanica**, 1-38, 2025. [109] Z. Chafia, J. Yvonnet, J. Bleyer, S. Vincent, S. El Ouafa, Massively parallel phase-field fracture simulations on supercomputers: towards multi-billion Degree-of-freedom computations, **Advanced Modelling and Simulation in Engineering Sciences**, November 2024, accepted.
[108] S. Chaouch, J. Yvonnet, Unsupervised machine learning classification for accelerating FE2 multiscale fracture simulations, **Computer Methods in Applied Mechanics and Engineering**, 432: 117278, 2024.
[107] X. Chen, S. Yao, J. Yvonnet, Nonlinear topology optimization of flexoelectric soft dielectrics at large deformation, **Computer Methods in Applied Mechanics and Engineering**, 427: 117005, 2024.
[106] X. Chen, S. Yao, J. Yvonnet, Multiscale topology optimization of an electromechanical dynamic energy harvester made of non-piezoelectric material, **Structural and Multidisciplinary Optimization**, 67:66, 2024.
[105] P. Li, Y. Wu, J. Yvonnet, S. Liu, S. Gu, Phase field modeling of dynamic fracture in elastoplastic composites taking into account interfacial debonding, **Engineering Fracture Mechanics**, 295: 109792 2024.
[104] S. Chaouch, J. Yvonnet, An unsupervised machine learning approach to reduce nonlinear FE2 multiscale calculations using macro clustering, **Finite Element in Analysis and Design**, 229: 104069, 2024.
[103] J. Yvonnet, D.Da, Topology optimization to fracture resistance: a review and recent developments, **Archives of Computational Methods in Engineering**, accepted, 2023.
[102] P. Kumar, A.V. Kumara, P. Li, J. Reinosob, Q.-C. He, J. Yvonnet, M. Paggi, SIMP Phase-field topology optimisation framework to maximise fracture resistance in FGMs, **Composite Structures**, Accepted, 2023.
[101] J. Yvonnet, Q.-C. He, P. Li, Reducing internal variables and improving efficiency in data-driven modelling of anisotropic damage from RVE simulations, **Computational Mechanics**, 72: 37–55, 2023.
[100] X. Chen, S. Yao, J. Yvonnet, Dynamic analysis of flexoelectric systems in the frequency domain with Isogeometric Analysis, **Computational Mechanics**, 71: 353–366, 2023. [99] Y. Wu, J. Yvonnet, P. Li, Topology optimization for enhanced dynamic fracture resistance of Structures, **Computer Methods in Applied Mechanics and Engineering**, 394:114846, 2022.
[98] J. Yvonnet, Q.-C. He, P. Li, A data-driven harmonic approach to constructing anisotropic damage models with a minimum number of internal variables, **Journal of the Mechanics and Physics of Solids**, 162:104828, 2022.
[97] P. Li, J. Yvonnet, Y. Wu, Improved fracture resistance of 3D-printed elastoplastic structures with respect to their topology and orientation of deposited layers, **International Journal of Mechanical Sciences**, 220: 107147, 2022.
[96] M.A. Benaimeche, J. Yvonnet, B. Bary, Q.-C. He, A k-means clustering machine learning-based nonlinear multiscale method for anelastic heterogeneous structures with internal variables, **International Journal for Numerical Methods in Engineering**, 123:2012–2041, 2022.

[95] D.-A. Hun, J. Yvonnet, J. Guilleminot, A. Dadda, A.-M. Tang, M. Bornert, Desiccation cracking of heterogeneous clayey soil: experiments, modelling and simulations, **Engineering Fracture mechanics**, 258:108065, 2021.

[94] P. Li, J. Yvonnet, C. Combescure, H. Makich, M. Nouari, Anisotropic elastoplastic phase field fracture modeling of 3D printed materials, **Computer Methods in Applied Mechanics and Engineering**, 386:114086, 2021.

[93] X. Lu, F. Detrez, J. Yvonnet, J. Bai, Identification of elastic properties of interphase and interface In graphene-polymer nanocomposites by atomistic simulations, **Composites Science and Technology**, 213(8):108943, 2021.

[A92] X. Chen, J. Yvonnet, S. Yao, H.S. Park, Enhanced converse flexoelectricity in piezoelectric composites by coupling topology optimization with homogenization, **Journal of Applied Physics,** 129:245104, 2021.

[A91] X. Lu, J. Yvonnet, L. Papadopoulos, I. Kalogeris, V. Papadopoulos, A stochastic FE2 data-driven method for nonlinear multiscale modeling, **Materials**, 14(11): 2875, 2021.

[A90] J.-L. Adia, J. Yvonnet, Q.-C. He, N.C. Tran, J. Sanahuja, A combined Lattice-Boltzmann-Finite Element approach to modeling unsaturated poroelastic behavior of heterogeneous media, **Journal of Computational Physics**, 437,110334, 2021.

[A89] X. Chen, J. Yvonnet, S. Yao, H.S. Park, Topology optimization of flexoelectric composites using homogenization, **Computer Methods in Applied Mechanics and Engineering**, 381, 113819, 2021.

[A88] P. Li, Y. Wu, J. Yvonnet, A SIMP-Phase field topology optimization framework to maximize quasi-brittle fracture resistance of 2D and 3D composites, **Theoretical and Applied Fracture Mechanics,** 114,102919.

[A87] R. Hatano, S. Matsubara, S. Moroguchi, K. Terada, J. Yvonnet, FEr method with surrogate localization model for hyperelastic composite materials, **Advanced Modeling and Simulation in Engineering Sciences**, 7(1), 1-28, 2020.

[A86] J. Yvonnet, X. Chen, P. Sharma, Apparent Flexoelectricity due to Heterogeneous Piezoelectricity, Journal of Applied Mechanics, 87(11): 111003, 2020.

[A85] D. Da, J. Yvonnet, Topology Optimization for Maximizing the Fracture Resistance of Periodic Quasi-brittle Composites Structures, **Materials**, 13:3279, 2020.

[A84] T.T. Nguyen, J. Yvonnet, D. Waldmann, Q.-C. He, Implementation of a new strain split to model unilateral contact within the phase field method, **International Journal for Numerical Methods in Engineering,** 121(21):4717-4733, 2020.

[A83] M.-V. Le, J. Yvonnet, F. Detrez, N. Feld, Full-field elastic simulations for image-based heterogeneous structures with a Coarse Mesh Condensation Multiscale Method**, International Journal for Multiscale Computational Engineering**, 18(3):305-327, 2020.

[A82] P. Li, J. Yvonnet, C. Combescure, An extension of the phase field method to model interactions between interfacial damage and brittle fracture in elastoplastic composites, **International Journal of Mechanical Sciences**, 179:105633, 2020.

[A81] M.-V. Le, J. Yvonnet, N. Feld, F. Detrez , The Coarse Mesh Condensation Multiscale Method for parallel computation of heterogeneous linear structures without scale separation, **Computer Methods in Applied Mechanics,** 363: 112877, 2020.

[A80] J. Yvonnet, N. Auffray, V. Monchiet, Computational second-order homogenization of materials with effective anisotropic strain-gradient behavior, **International Journal of Solids and Structures**, 191-192:434-448, 2020.

[A79] V. Monchiet, N. Auffray, J. Yvonnet, Strain-gradient homogenization: a bridge between the asymptotic expansion and quadratic boundary condition methods, Mechanics of Materials, 143:103309, 2020.

[A78] T.T. Nguyen, J. Yvonnet, D. Waldmann, Q.-C. He, Phase field modeling of interfacial damage in heterogeneous media with stiff and soft interphases, **Engineering Fracture Mechanics**, accepted 2019.

[A77] D.A. Hun, J. Guilleminot, J. Yvonnet, M. Bornert, Stochastic Multi-Scale Modeling of Crack Propagation in Random Heterogeneous Media, **International Journal for Numerical Methods in Engineering**, 2019:1325-1344, 2019

[A76] X. Lu, D. Giovanis, J. Yvonnet, V. Papadopoulos, F. Detrez, J. Bai, A data-driven computational homogenization method based on neural networks for the nonlinear anisotropic electrical response of graphene/polymer nanocomposites, **Computational Mechanics**, 64(2):307-321, 2019.
[A75] X. Lu, F. Detrez, J. Yvonnet, J. Bai, Multiscale study of influence of interfacial decohesion on piezoresistivity of graphene/polymer nanocomposites, **Modelling and Simulation in Materials Science and Engineering**, 27:035001, 2019.
[A74] N. Nguyen, J. Yvonnet, J. Rethoré, A.B. Tran, Identification of fracture models based on phase field for crack propagation in heterogeneous lattices in a non-separated multiscale context, **Computational Mechanics**, 63(5):1047-1068, 2019.
[A73] K-M Kodjo, J. Yvonnet, M. Karkri, K. Sab, Multiscale modeling of the thermomechanical behavior in heterogeneous media embedding Phase Change Materials particles, **Journal of Computational Physics**, 378(1): 303-323, 2019.
[A72] D. Da, J. Yvonnet, L. Xia, M.-V. Le, G. Li, Topology optimization of periodic lattice structures taking into account strain gradient, **Computers and Structures**, 210:28-40, 2018.
[A71] D.Da, J. Yvonnet, L. Xia, G. Li, Topology optimization of particle-matrix composites for optimal, fracture resistance taking into account interfacial damage, **International Journal for Numerical Methods in Engineering**, 115(5):604-626, 2018.
[A70] C. Chateau, T.T. Nguyen, M.Bornert, J.Yvonnet, DVC-based image subtraction to detect cracking in lightweight concrete, **Strain**, 2018, 54:e12276, 2019
[A69] X. Lu, J. Yvonnet, F. Detrez, J. Bai, Low electrical percolation thresholds and nonlinear effects in graphene-reinforced nanocomposites: a numerical analysis, **Journal of Composite Materials**, 52(20):2767–2775, 2018.
[A68] L. Xia, D. Da, J. Yvonnet, Topology optimization for maximizing the fracture resistance of quasi-brittle composites, **Computer Methods in Applied Mechanics and Engineering**, 332:234-254,2018.
[A67] L. Xia, J. Yvonnet, S. Ghabezloo, Phase field modeling of hydraulic fracturing with interfacial damage in highly heterogeneous fluid-saturated porous media, **Engineering Fracture Mechanics**, 186:158-180, 2018.
[A66] T.T. Nguyen, J. Yvonnet, M. Bornert, C. Chateau, F. Bilteryst, E. Steib, Large-scale simulations of quasi-brittle microcracking in realistic highly heterogeneous microstructures obtained from micro CT imaging, **Extreme Mechanics Letters**, 17:50-55, 2018.
[A65] T.T. Nguyen, J. Rethoré, J. Yvonnet, M.C. Baietto, Multi-phase-field modeling of anisotropic crack propagation for polycrystalline materials, **Computational Mechanics**, 60(2):289-314, 2017.
[A64] X. Lu, J. Yvonnet, F. Detrez, J. Bai, Multiscale modeling of nonlinear electric conductivity in graphene-reinforced nanocomposites taking into account tunnelling effect, **Journal of Computational Physics**, 337:116-131, 2017.
[A63] J. Yvonnet, L.P. Liu, A numerical framework for modeling flexoelectricity and Maxwell stress in soft dielectrics at finite strains, **Computer Methods in Applied Mechanics and Engineering**, 313:450-482, 2017.
[A62] M.G.D. Geers, J. Yvonnet, Multiscale Modeling of Microstructure-Property Relations, **MRS Bulletin**, 41(08):610-616, 2016.
[A61] T.T. Nguyen, J. Yvonnet, Q.-Z. Zhu, M. Bornert, C. Chateau, Initiation and propagation of complex 3D networks of cracks in heterogeneous quasi-brittle materials: direct comparison between in situ testing- microCT experiments and phase field simulations, **Journal of the Mechanics and Physics of Solids**, 95:320-350, 2016.
[A60] C. Pan, J. Hu, M.T., E. Grustan-Gutierrez , M.T. Hoang, H.L. Duan, J. Yvonnet, A. Mitrushchenkov, G. Chambaud, M. Lanza, Suppression of nanowire clustering in hybrid energy harvesters, **Journal of Materials Chemistry C**, 4-16):3646-3653.
[A59] T.T. Nguyen, J. Yvonnet, M. Bornert, C. Chateau, K. Sab, R. Romani, R. Le Roy, On the choice of numerical parameters in the phase field method for simulating crack initiation with experimental validation, **International Journal of Fracture**, 197(2), 213-226, 2016.

[A58] A. Tognevi, M. Guerich, J. Yvonnet, A multi-scale modeling method for heterogeneous structures without scale separation using a filter-based homogenization scheme, **International Journal for Numerical Methods in Engineering**, 108(1-5):3-25, 2016.
[A57] T.H. Hoang, M. Guerich, J. Yvonnet, Determining the size of RVE for nonlinear random composites in an incremental computational homogenization framework, **Journal of Engineering Mechanics**, 142(5): 04016018, 2016.
[A56] T.T. Nguyen, J. Yvonnet, Q.-Z. Zhu, M. Bornert, C. Chateau, A phase-field method for computational modeling of interfacial damage interacting with crack propagation in realistic microstructures obtained by microtomography, **Computer Methods in Applied Mechanics and Engineering**, 312:567-595, 2016.
[A55] B.A. Le, J. Yvonnet, Q.-C. He, Computational homogenization of nonlinear elastic media using Neural Networks, **International Journal for Numerical Methods in Engineering**, 104(12):1061-1084, 2015.
[A54] T.T. Nguyen, J. Yvonnet, Q.-Z. Zhu, M. Bornert, C. Chateau, A phase field method to simulate crack nucleation and propagation in strongly heterogeneous materials from direct imaging of their microstructure, **Engineering Fracture Mechanics**, 139:18-39, 2015.
[A53] Y. Cong, S. Nezamabadi, H. Zahrouni, J. Yvonnet, Multiscale computational homogenization of heterogeneous shells at small strains with extensions to finite displacements and buckling, **International Journal for Numerical Methods in Engineering**, 104(4):235-259.
[A52] S. Nezamabadi, M. Potier-Ferry, H. Zahrouni, J. Yvonnet, Compressive failure of composites: a computational homogenization approach, Composite Structure, 127:60-68, 2015.
[A51] M.T. Hoang, J. Yvonnet, A. Mitrushchenkov, G. Chambaud, H.L. Duan, Size-dependent mechanical properties of axial and radial mixed AlN/GaN nanostructures, **Nanotechnology**, 26:115703, 2015.
[A50] Q.-Z. Zhu, J. Yvonnet, An incremental-iterative method for modeling damage in voxel-based microstructure models, **Computational Mechanics**, 55(2):371-382, 2015.
[A49] J. Yvonnet, G. Bonnet, Nonlocal/coarse graining homogenization of linear elastic media with non-separated scales using least-square polynomial filters, **International Journal for Multiscale Computational Engineering**, 12(5):375-395, 2014.
[A48] J. Yvonnet, G. Bonnet, A consistent nonlocal scheme based on filters for the homogenization of heterogeneous linear materials with non-separated scales, **International Journal of Solids and Structures**, 51:196-209, 2014.
[A47] Y. Cong, J. Yvonnet, H. Zahrouni, Simulation of instabilities in thin nanostructures by a perturbation approach, **Computational Mechanics**, 53(4):739-750, 2014.
[A46] A.B. Tran, J. Yvonnet, Q.-C. He, C. Toulemonde, J. Sanahuja, A four scales-creep analysis of a nuclear containment structure, **Nuclear Engineering and Design**, 265:712-726, 2013.
[A45] J. Yvonnet, E. Monteiro, Q.-C. He, Computational homogenization method and reduced database model for hyperelastic heterogeneous structures, **International Journal for Multiscale Computational Engineering**, 11(3):201-225, 2013.
[A44] M.T. Hoang, J. Yvonnet, A. Mitrushchenkov, G. Chambaud, First-principles based multiscale model of piezoelectric nanowires with surface effects, **Journal of Applied Physics**, 113(1): 014309, 2013.
[A43] A. Clément, C. Soize, J. Yvonnet, Uncertainty quantification in computational stochastic multiscale analysis of nonlinear elastic materials, **Computer Methods in applied Mechanics and Engineering**, 254:61-82, 2013.
[A42] C. Dunand, B. Barry, S. Brisard, A. Gioria, C. Péniguel, J. Sanahuja, C. Toulemonde, A.B. Tran, F. Willot, J. Yvonnet, A critical comparison of several numerical methods for computing

effective properties of highly heterogeneous materials, **Advances in engineering Software**, 58:1-12 (2013).
[A41] S. Nezamabadi, H. Zahrouni, J. Yvonnet, M. Potier-Ferry, Multiscale analysis of instabilities in heterogeneous materials using ANM and multilevel FEM, **European Journal of Computational Mechanics**, 22(3-6):280-289, 2012.
[A40] J. Yvonnet, A. Mitrushchenkov, G. Chambaud, Q.-C. He, S.-T. Gu, Characterization of surface and nonlinear elasticity in wurtzite ZnO nanowires, **Journal of Applied Physics**, 111:124305, 2012.
[A39] J. Yvonnet, A fast method for solving microstructural problems defined by digital images: a space Lippmann-Schwinger scheme, **International Journal for Numerical Methods in Engineering**, 92(2):178-205 (2012)
[A38] A. Clément, C. Soize, J. Yvonnet, Computational nonlinear stochastic homogenization using a non-concurrent multiscale approach for hyperelastic heterogenous microstructures analysis, **International Journal for Numerical Methods in Engineering**, 91 (8), 799- 824 (2012)
[A37] A. Khajeansari, G.H. Baradan, J. Yvonnet, An explicit solution for static bending of nanowires lying on Winkler-Pasternak elastic type substrate medium based on the Euler-Bernoulli beam theory, **International Journal of Engineering Science**, 52:115-128 (2012)
[A36] Tran A.B., Yvonnet J., He Q.-C., Toulemonde C., Sanahuja J., A simple computational homogenization method for structures made of heterogeneous linear viscoelastic materials, **Computer Methods in Applied Mechanics and Engineering**, 200(45-46):2956-2970 (2011)
[A35] Monteiro E., He Q.-C., Yvonnet J., Hyperelastic large deformations of two-phases composites with membrane-type interface, **International Journal of Engineering Sciences**, 49(9):985-1000 (2011)
[A34] Zhu Q.-Z. Gu S.-T. Yvonnet J. Shao J.-F. He Q.-C., Three-dimensional numerical modelling by XFEM of spring layer imperfect curved interfaces with applications to composite materials, **International Journal for Numerical Methods in Engineering**, 88(4):307-328 (2011)
[A33] Yvonnet J., Mitrushchenkov A., Chambaud G., He Q.-C., Finite element model of ionic nanowires with size-dependent mechanical properties determined by ab initio calculations, **Computer Methods in applied Mechanics and Engineering**, 200:614-625 (2011)
[A32] Monteiro E., Yvonnet J., He Q.-C., Cardoso O., Asnacios A., Analyzing the interplay between single cell rheology and force generation through large deformation finite element models, **Biomechanics and Modeling in Mechanobiology**, *10(6):813-830 (2011)*
[A31] Nezamabadi S., Zahrouni H., Yvonnet J., Solving hyperelastic material problems by asymptotic numerical method, **Computational Mechanics**, 47(1):77-92 (2011)
[A30] Tran A.B., Yvonnet J., He Q.-C., Toulemonde C., Sanahuja J., A multiple level-set approach to prevent numerical artefacts in complex microstructures within XFEM, **International Journal for Numerical Methods in Engineeering**, 85(11):1436-1459 (2011)
[A29] Yvonnet J., He Q.-C., Q. Zhu, J.-F. Shao, A general and efficient computational procedure for modelling the Kapitza thermal resistance based on XFEM, **Computational Materials Science**, 50:1220-1224 (2011)
[A28] Mitrushchenkov A., Chambaud G., Yvonnet J., He, Q.-C., Towards an elastic model of wurtzite AlN model, **Nanotechnology**, 21(25):255702 (2010).
[A27] Yvonnet J., He Q.-C, A non-concurrent multiscale method for computing the response of nonlinear heterogeneous structures, **European Journal of Computational Mechanics**, 19:105-116 (2010)
[A26] Nezamabadi S., Zahrouni H., Yvonnet J., Potier-Ferry M., A multiscale finite element approach for buckling analysis of elastoplastic long fibre composites, **International Journal for Multiscale Computational Engineering**, 8(3):287-301 (2010)

[A25] Cosson B., Chevalier L., Yvonnet J., Optimisation of the Thickness of PET Bottle during Stretch-Blow Moulding by using a Mesh-Free (Numerical) Method, **International Polymer Processing**, 24(3): 223-233 (2009)

[A24] Yvonnet J., Gonzalez D., He Q.-C., Numerically explicit potentials for the homogenization of nonlinear elastic heterogeneous materials, **Computer Methods in Applied Mechanics and Engineering**, 198:2723-2737 (2009).

[A23] Nezamabadi S., Yvonnet J., Zahrouni H., Potier-Ferry M., A multilevel computational strategy for handling microscopic and macroscopic instabilities, **Computer Methods in Applied Mechanics and Engineering**, 198:2099-2110 (2009).

[A22] Yvonnet J., He Q.-C., Toulemonde C., Numerical modelling of the effective conductivities of composites with arbitrarily shaped inclusions and highly conducting interface, **Composites Science and Technology**, 68:2828-2825 (2008)

[A21] Yvonnet J., Le Quang H., He Q.-C., An XFEM/level set approach to modelling surface/interface effects and to computing the size-dependent effective properties of nanocomposites, **Computational Mechanics**, 42, 704-712 (2008).

[A20] Monteiro E., Yvonnet J., He Q.-C., Computational homogenization for nonlinear conduction in heterogeneous materials using model reduction, **Computational Materials Science**, 42, 704-712 (2008)

[A19] To Q.D., He Q.-C., Cossavella M., Morcant K., Panait A., Yvonnet J., Glass tempering and failure analysis of tempered glass structures with pin-loaded joints, **Materials and Design**, 29(5), 943-951 (2008)

[A18] Cosson B., Chevalier L., Yvonnet J., Simulation du procédé de soufflage par la méthode des éléments naturels contraints (C-NEM): application à l'optimisation du procédé, **Matériaux et Techniques**, 96, 243-251 (2008)

[A17] Yvonnet J., Zahrouni H., Potier-Ferry M., A model reduction method for the post-buckling analysis of cellular microstructures, **Computer Methods in Applied Mechanics and Engineering**, 197, 265-280 (2007).

[A16] Alfaro I., Yvonnet J., Chinesta F., Cueto E., A study on the performances of natural-neighbour-based Galerkin methods, **International Journal for Numerical Methods in Engineering**, 71(12), 1436-1465 (2007).

[A15] To Q.D., He Q.-C., Cossavella M., Morcant K., Panait A., Yvonnet J., Failure analysis of a pin-loaded joint in tempered glass structures, **Engineering Failure Analysis**, 14, 841-850 (2007).

[A14] Yvonnet J., He Q.-C., The Reduced Model Multiscale Method (R3M) for the nonlinear homogenization of hyperelastic media at finite strains, **Journal of Computational Physics**, 223, 341-368 (2007).

[A13] Alfaro I., Yvonnet J., Cueto E., Chinesta F., Doblaré M., Meshless methods with application to metal forming, **Computer Methods in Applied Mechanics and Engineering**, 195(48-49), 6661-6675 (2006).

[A12] Yvonnet J., Coffignal G., Ryckelynck D., Lorong Ph., Chinesta F., A simple error indicator for meshfree methods based on natural neighbors, **Computers and Structures**, 84 (21) 1301-1312, (2006).

[A11] Illoul L.A., Yvonnet J., Chinesta F., Clenet S., Application of the natural element method to model moving electromagnetic devices, **IEEE Transactions on Magnetics**, 42(4) 727-730 (2006).

[A10] Yvonnet J., Villon P., Chinesta F., Natural Element approximations involving bubbles for treating incompressible media, **International Journal for Numerical Methods in Engineering**, 66(7), 1125—1152 (2006)

[A9] Yvonnet J., Umbrello D., Chinesta F., Micari F., A simple inverse procedure to determine heat flux on the tool in orthogonal cutting, **International Journal of Machining tools and manufacturing**, 46(7-8):820-827 (2006)

[A8] Lorong Ph., Yvonnet J., Coffignal G., Assouline S., Contribution of structural analysis in numerical simulation of machining and blanking : state-of-the-art, **Archives of Computational Methods in Engineering**, 13(1), 45—90. (2006)

[A7] Alfaro I., Yvonnet J., Cueto E., Chinesta F., Villon P., Doblaré M., Nouvelles avancées dans les méthodes sans maillage de type éléments naturels pour la simulation des procédés de mise en forme. **Revue Européenne de Mécanique Numérique** (anciennement Revue Européenne des Eléments Finis) (200) ; 15(1-2-3) :29-45.

[A6] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., Simulating thermo-elasto-plasticity in large transformations with adaptive refinement in the natural element method: application to shear banding, **International Journal of Forming Processes**, 8, 347-363 (2005).

[A5] Yvonnet J., Chinesta F., Ryckelynck D., Lorong Ph., The constrained natural element method (C-NEM) for treating thermal models involving moving interfaces, **International Journal of Thermal Sciences**, 44, 559-569 (2005).

[A4] Sukumar N., Dolbow J., Devan A., Yvonnet J., Chinesta F., Ryckelynck D., Lorong P., Alfaro I., Martinez M.A., Cueto E., Doblaré M.. Meshless methods and partition of unity finite elements, **International Journal of forming processes**, 8 (4), 409-427 (2005).

[A3] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., A new extension of the natural element method for non convex and discontinuous domains : the constrained natural element method (C-NEM), **International Journal for Numerical Methods in Engineering**, 60, 1451-1474 (2004).

[A2] Chinesta F., Lorong Ph., Ryckelynck D., Martinez M. A., Cueto E., Doblaré M., Coffignal G., Touratier M., Yvonnet J., Thermomecanical cutting model discretisation : eulerian or lagrangian, mesh or meshless ?, **International Journal of forming processes**, 7 (2), 83 – 97 (2004).

[A1] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., Interpolation naturelle sur les domaines non convexes par l'utilisation du diagramme de Voronoï contraint : méthode des éléments C-naturels, **Revue Européenne de Mécanique Numérique** (2003) ; 13: 487 – 509.

BOOK CHAPTERS

[B9] X. Lu, J. Yvonnet, F. Detrez, J. Bai, Modélisation électromécanique non linéaire multi-échelle de nanocomposites graphène-polymère, In: Nanocomposites, préparation, caractérisation et modélisation, J. Bai (Ed), ISTE-Wiley, 2021.

[B8] T.T. Nguyen, J. Yvonnet, M. Bornert, C. Château, Modeling of Complex Microcracking in Quasi-Brittle Materials: Numerical Methods and Experimental Validations, In: Advances in Multi-Physics and Multi-Scale Couplings in Geo-Environmental Mechanics, F. Nicot, O. Millet (Eds), Wiley, 2017.

[B7] M.G.D. Geers, V. Kouznetsova, K. Matous, J. Yvonnet, Homogenization methods and multiscale modeling: non-linear problems, In: Encyclopedia of Computational Mechanics, E. Stein, R. de Borst, T.J.R. Hughes (eds.), Wiley, 2016.

[B6] Yvonnet J., He Q.-C., Monteiro E., Tran A.B., Toulemonde C., Sanahuja C., Clément A., Soize C., Non-concurrent computational homogenization of nonlinear, stochastic and viscoelastic materials, dans Handbook of Micromechanics and Nanomechanics, S. Li and X.-L Gao (eds.), Pan Stanford, 2013.

[B5] Chinesta F., Yvonnet, J., Villon P., Breitkopf P., Joyot P., Alfaro I., Cueto E., New Advances in meshless methods : Coupling natural element and moving least square techniques, dans Advances in

Meshfree Techniques, Computational Methods in Applied Sciences, 5, 97-121, V.M.A. Leitao, C.J.S. Alves, Duarte C., eds., 2007.
[B4] Chinesta F., Yvonnet J., Villon P., Breitkopf , P., Joyot P., Alfaro I., Cueto E., Nouvelles avancées dans les méthodes sans maillage : le couplage des techniques éléments naturels et moindres carrés mobiles dans Modélisation Numérique – Défis et Perspectives, P. Breitkopf, C. Knopf-Lenoir, Hermès Science, 2007.
[B3] Yvonnet J., Villon P., Chinesta F., Natural element approximations involving bubbles for treating incompressible media, ??, dans Lecture Notes in Computational Science and Engineering. Meshfree Methods for Partial Differential Equations III, 54, Michael Griebel and Marc A. Schweitzer, Springer Verlag, 2007.
[B2] Yvonnet J., Lorong P., Ryckelynck D., Chinesta F., Coffignal G., Nouvelles avancées dans les méthodes sans maillage basées sur les éléments naturels contraints pour la simulation des procédés, dans Extensions et Alternatives à la Méthode des Eléments Finis, Piotr Breitkopf, Hermès Science, 2006.
[B1] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., Treating moving interfaces in thermal models with the C-NEM, 255 – 270, dans Lecture Notes in Computational Science and Engineering. Meshfree Methods for Partial Differential Equations II, Michael Griebel and Marc A. Schweitzer, Springer Verlag 2005.

PROFESSIONAL SERVICE ACTIVITIES

[3] 2024 – President of CSMA (French Computational Structural Mechanics Association)
[2] 2017- Elected member of the administrative board of CSMA (French Computational Structural Mechanics Association)
[1] 2017 – Member of the General Council of IACM (International Association for Computational Mechanics)

INVITED LECTURES IN NTERNATIONAL OR NATIONAL CONFERENCES

Plenary lectures

[6] J. Yvonnet, Machine learning-based multiscale fracture, European Mechanics of Materials Conferences (EMMC 20), Florence, Italy, 27-29 May 2026
[5] J. Yvonnet, Machine learning-based multiscale fracture modelling, 1st Hellenic-Italian Conference on Computational Mechanics, Biomechanics and Mechanics of Materials (HICOMP), Rhodes Island, Greece, 19-21 June, 2025.
[4] J. Yvonnet, ECCOMAS Reduced order models for fracture and path-dependent multiscale simulations: Macro Clustering and data-driven approaches, 6th International Workshop on Model reduction Techniques (MORTECH), Paris Saclay, 22-24 November 2023, France.
[3] J. Yvonnet, Microfissuration des matériaux hétérogènes, 15e colloque national en calcul des structures, Giens, France , May 16-22, 2022
[2] J. Yvonnet, Microcracking in heterogeneous materials, 8th international conference on "Advanced COmputational Methods in Engineering (ACOMEN)" Liège, Belgium, August 31- September 2, 2022.
[1] Numerical modeling of fracture in highly heterogeneous materials, XXXIX Ibero-Latin American Congress on Computational Methods in Engineering (CILAMCE 2018), Compiègne, France, 11-14 November 2018.

Semi-plenary lecture

[2] J. Yvonnet, Machine learning-based multiscale fracture, 3rd IACM Digital Twins in Engineering Conference (DTE 2025) & 1st ECCOMAS Artificial Intelligence and Computational Methods in Applied Science (AICOMAS 2025), Paris, 17-21 February 2025, France.

[1] Computational homogenization of micro and nano-structured materials, 11th World Congress on Computational Mechanics, Barcelona, 20-25 July, 2014.

Keynote lectures and invited lectures: see complete list of publications

CONTRACTS AND GRANTS (funded)

As PI or co-PI :

[21] PI – Safran Aircraft Engines, One-year study (2024) Numerical modelling of damage in 3D woven composites» : 32 k€

[20] **PI** – Safran Aircraft Engines, ONERA, PhD contract (2023-2026) Arthur MONTAZEL PhD thesis, « Progressive damage in woven composites » : 60 k€

[19] **PI** – ALTAIR, « Multi-scale modeling of compressive damage in 3D printed architected lattices» : 10 k€

[18] **PI** – SAFRAN, phD thesis Ali KETATA, « Adaptive and controlled multi-scale analysis of industrial structures» : 60 k€

[17] **PI**– CEA/Orano, Post-doc Amine Benaimeche «Modeling and simulation of the mechanical effects of internal expansion due to corrosion of metal inclusions in cementitious matrices» : 15k€ (co-auteurs, Qi-Chang He, Benoit Bary)

[16] **PI** – Bosch Research Foundation (2021-2023) Thesis Hamid Reza Madadi « Artificial Intelligence and Computational Material Science – AI Based Two Scale Homogenization» : 186k€

[15] **PI** – CEA/Orano, research contract (2020-2021) Thèse Amine Benaimeche « modeling and simulation of mechanical swelling effects due to corrosion of metallic inclusions in cementitious matrices » : 18k€ (co-auteurs, Qi-Chang He, Benoit Bary)

[14] **PI** – Naval Group, research contract (2019-2020) « Modeling of ablative materials : XFEM and Phase field approaches» : 20 k€

[13] **PI** – Naval Group, research contract (2018-2019) « multiscale modeling of porous elastomers with computational homogenization» : 20 k€

[12] **PI** – Safrantech, PhD contract (2018-2021) Thèse Minh Vuong Le : « Multiscale modeling of composites with mesostructures gradients » : 60 k€

[11] **PI** - Saint Gobain (2016-2017) : «Modeling of microcracking in foamed plaster samples» : 7 k€

[10] **PI** – DCNS (2016-2017) : «Design of Structures based on sublattices» : 20 k€

[9] **PI** - ANR PRCE Project "MMELED" (2016-2020) « Multiscale modeling and experimental investigations of damage in composite workpieces obtained by 3D printing »: 620 k€

[8] **Co-PI** - NEEDS CNRS-CEA Project (2016-2018) « 3D mesoscopic simulations of microcracking and creep in concrete including cement paste/inclusions interfaces» : 9.5 k€ (co- authors: Qi-Chang He, Benoit Barry)

[7] **Co-PI** – EDF (2014-2017) Thèse Jean-Luc Adia «Multiscale modelling of creep and hydric phenomena in concrete materials » (co- author: Qi-Chang He) : 60 k€+110k€ (PhD)

[6] **Co-PI** – EDF (2012-2013), financement de post-doc : «Simulation of Stress Corrosion Cracking» (co- author: Qi-Chang He) : 55 k€

[5] **Co-PI** - PPS Université Paris-Est (2011-2013) "Quantum and continuum mechanics for modelling nanostructures » (co-author: C. Léonard): 190 k€

[4] **PI** – EUROBIOS (2010) Meshfree methods for simulation of transport in porous media: 7 k€

[3] **Co-PI** – EDF (2009-2010) : «Numerical methods of microstructures calculations obtained from microtomography images» (co- author: Guy Bonnet) : 20 k€

[2] **Co-PI** - EDF, (2008-2011) «XFEM/LEvel-set modelling of effective properties of concrete by taking into account the effects of the microstructure and imperfect interfaces» (co- author: Qi-Chang He) 60 k€+110k€ (PhD)

[1] **Co-PI** – EDF (2007-2008) : " XFEM/Level-set modeling of imperfect interfaces in concrete " (co-author: Qi-Chang He) : 20 k€

<u>As participant</u>

[2] ANR Project « TYCHE" (2011-2013) Advanced numerical methods using high dimensions stochastic modeling for quantification and propagation of uncertaintainties in solids and fluids mechanics » (Main investigator : C. Soize)
[1] ANR Project «MOSAIC» (2012-2015), "Stochastic modelling in nonlinear micromechanics" (Main investigator : J. Guilleminot)

VISITING POSITIONS

- Brown University, USA, Prof. Miguel BESSA, November 2023
- Brown University, USA, Prof. Miguel BESSA, March 2023
- IMT Lucca, Italy, Prof. Marco PAGGI, October 2022
- National Technical University of Athens, Greece, professor Vissarion PAPADOPOULOS, October 2021.
- Boston University, Boston, USA, professor Harold PARK, October 2019.
- University of California at Berkeley, USA, Professeur Tarek ZOHDI, October 2018.

- Huazhong University of Science and Technology, Wuhan, China, Prof. Liang XIA, March 2018
- The University of Houston, Texas, USA, Prof. Pradeep SHARMA, January 2016
- The University of Houston, Texas, USA, Prof. Pradeep SHARMA, December 2014
- The University of Houston, Texas, USA, Prof. Pradeep SHARMA, March 2014
- Peking University, College of Engineering (China), Prof. Huiling DUAN, November 2012
- National University of Singapore (NUS), Singapore, Prof. Vincent TAN, Novembre 2011
- National University of Singapore (NUS), Singapore, Prof. Vincent TAN, March 2011
- Peking University, College of Engineering (China), Prof. Huiling DUAN, Octobre 2010
- Peking University, College of Engineering (China), Prof. Huiling DUAN, Octobre 2008
- The University of Saragoza (Spain), Prof. M. Doblaré et Francisco Chinesta, December 2005

SHORT COURSES TAUGHT

- Introduction to numerical homogenization using finite elements, 17-21 January 2022, 2022, Colloque MECAMAT Matériaux architecturés, Aussois, France (Special invited course)
- Peking University, China: "An introduction to computational homogenization", 11 october 2010
- Peking University, China: "Numerical methods for the multiscale analysis of solids: an introduction", 14-15 October 2008

TEACHING

ENSAM Paris (2003-2005)
396 hours/year as temporary professor

- Nonlinear structures mechanics (graduate level)
- Computational thermodynamics (graduate level)
- Multiphysics coupling (graduate level)
- Engineers projects advising (graduate level)

Université Paris-Est Marne-la-Vallée (2005-)
196 hours/year as associate and full professor

- Advanced numerical methods (doctoral level)
- Machine learning for mechanics
- Introduction to numerical methods and Finite Elements
- Computational homogenization of heterogeneous materials (graduate level)
- Instabilities of structures (graduate level)
- Finite Elements and optimization (graduate level)
- Material selection for engineers (graduate level)
- Boundary value problems and Finite Elements (undergraduate level)
- Solid mechanics (undergraduate level)
- Strength of materials (undergraduate level)
- Materials Sciences (undergraduate level)
- Complex curves and surfaces (undergraduate level)

- Manufacturing technologies (undergraduate level)

ADVISING

Doctoral students supervised
4 ongoing PhD theses
24 defended PhD theses

- **ZEAITER** Nour (2024-)
- **LI** Zhonghua (2023-)
- **MONTAZEL Arthur** (2023-)
- **ABOU EID** Jana (2022-)
- **CHAFIA** Zakaria (2021-)
- **KETATA** Ali (2021-)
- **CHAOUCH** Souhail (2021-2024), Artificial Intelligence and Computational Material Science – AI Based Two-Scale Homogenization »
- **CHEN** Xing (2021-2024), « Topology optimization for energy harvesting systems based on piezoelectric composites"
- **WU** Yi (2017-2022) "Design and robust design of structure and material in dynamics via topology optimization"
- **BEGKOU** Franck (2020-2023) « Energy performance of printable concrete walls incorporating phase-change materials (PCMs) and plant fibers: experimental approach and modeling of thermo-hydric behavior"
  Co-advisor : Karim Benzarti (Univ Gustave Eiffel), M.A. Boudenne(Univ Paris-Est Creteil), A. Eddhahak (ENSAM Paris)
  Funding : LABEX MMCD
- **BENAIMECHE** Amine **(2018-2021)** « Modelling and simulation of mechanical swelling effects due to corrosion of metallic inclusions in concrete matrices »
- Co-advisor : Qi-Chang HE (Univ. Paris Gustave Eiffel, MSME)
- Funding : CEA/ORANO
- **LE** Minh Vuong **(2017-2020)** « Multiscale modeling of structure with gradient of properties »
- **LI** Pengfei **(2017-2020)** « Multiscale numerical modeling and experimental investigation of damage in 3D-printed polymer-glass composites »
- **HUN Darith-Anthony (2016-2020)** « Multiscale modeling of hydric drying-induced cracking: computational modeling, experimental validations and stochastic models »
  Defended 28 May, 2020
  Co-adviser : J. Guilleminot (Duke University, USA), M. Bornert (Ecole des Ponts PArisTech)
  Funding: LABEX MMCD
- **NGUYEN Nhu (2016-2019)** « Multiscale modeling of fracture in quasi brittle materials »
  Defended 19 April, 2019
  Funding: Vietnamian government
- **KODJO Jérôme (2015-2019)** « Multiscale modeling of concrete incorporating thermal phase change particles »
  Co-advisors : K. Sab (Navier, ENPC), M. Karkri (CERTES, Univ-Paris-Est Créteil)
  Funding : Labex MMCD
- **DA Daicong (2016-2018)** « Topological homogenization in heterogeneous materials"

Funding: Chinese Scholarship Council

- **ADIA Jean-Luc (2014-)** "Multiscale modelling of shrinkage and creep effects in cementitious materials»
  Co-advisor : Qi-Chang HE (Univ. Paris-Est MLV, MSME)
  Funding : EDF R&D
- **LU Xioxin (2014-2017)** « Multiscale electro-mechanical modeling of graphene/polymer nanocomposites"
  Co-advisor : J. Bai (Ecole Centrale de Paris), Fabrice Detrez (Univ. Paris-Est MLV, MSME)
  Funding : (Ecole Centrale de Paris)
- **HOANG Trung Hieu (2012-2015)** « Incremental computational homogenization approaches for elastoplastic and viscoplastic heterogeneous structures calculations»
  Co-advisor : M. Guerich (Ecole Supérieure d'Ingénieurs Léonard de Vinci)
  Funding : Ecole supérieure d'ingénieurs Léonard de Vinci
- **NGUYEN Thanh Tung (**2012-2015) «Approaches combining imagery and numerical simulation for study of cement-based materials»
  Co-advising : M. Bornert, (Navier, ENPC), Q.-Z. Zhu, (Univ. Paris-Est MLV, MSME)
  Funding : LABEX MMCD
- **HOANG Minh Tuan (2011-2014),** « Multiscale modelling of piezoelectrical nanostructures»
  Co-advising : G. Chambaud (Univ. Paris-Est MLV, MSME), A. Mitrushchenkov (Univ. Paris-Est MLV, MSME)
  Funding: PPS project Univ. Paris-Est MLV.
- **LE Ba Anh (2010-2014)** « Computational homogenization of elastoplastic heterogeneous materials »
  Defended 24 January, 2014
  Co-adviser : Q.-C. He (Univ. Paris-Est MLV)
  Funding: Grant from Univ. Paris-Est MLV
- **CONG Yu (2011-2014) « Multiscale modelling of heterogeneous shells with micro and nano structures** »
  Defended 6 December, 2013
  Co-advising : H. Zahrouni (Université de Lorraine, LEM3)
  Funding: Grant from Univ. Lorraine
- **TRAN Anh Binh (2008-2011) «** Development of multiscale computational methods for heterogeneous elastic and viscoelastic structures »
  Defended 13 October, 2011
  Co-adviser: Q.-C. He (Univ. Paris-Est MLV)
  Funding: EDF R&D
- **MONTEIRO Eric (2006-2010) «** Contributions to computational methods for treating nonlinearities and discontinuities in heterogeneous materials »
  Defended 11 March, 2010
  Co-adviser: Q.-C. He (Univ. Paris-Est MLV)
  Funding: Grant from Univ. Paris-Est MLV
- **NEZAMABADI Saeid (2005-2009)** « Asympotical numerical method for the multiscale analysis of instabilities of structures »
  Defended 11 March, 2010
  Co-adviser: H. Zahrouni (Université de Lorraine, LEM3)
  Funding: Grant from Univ. Lorraine
  (Award for best PhD Thesis, Computational Structural Modeling Association, 2009)

- **TO Quy-Dong (2005-2009)** « Analysis and simulation of contact and damage in tempered glass structures »
  Defended 19 November, 2007
  Co-adviser: Q.-C. He (Univ. Paris-Est MLV)
  Funding: CSTB

Post-doctoral fellows advising

- Pavan Kumar (2021-2022)
  (co-advisors: Qi-Chanh He, Univ Gustave Eiffel, Marci Paggi, Univ IMT Lucca, Italy).
- Pengfei LI (2020)
- Liang XIA (2016-2017)
  Co-advisor: S. Ghabezloo, (NAVIER).
- Massoud SHAHROKHI (2015-2016)
  Co-advisor: C. Léonard (MSME), G. Stolz, V. Erhlacher (CERMICS)
- Amen TOGNEVI (2013-2015)
  Co-advisors : M. Guerich (Ecole Supérieure d'Ingénieurs Léonard de Vinci), M. Karkri (CERTES Lab, Université Paris-Est Créteil, UPEC)
- Duc Hieu HOANG (2012-2013)
  Co-advising: Q.-C. He (Univ. Paris-Est MLV), C. Toulemonde (EDF R&D), T. Couvant (EDF R&D)
- Shui-Tao GU (2010-2011)
  Co-advising: Q.-C. He (Univ. Paris-Est MLV), A. Mitrushchenkiv (Univ. Paris-Est MLV)
- Qizhi ZHU (2008-2009)
  Co-advising: Q.-C. He (Univ. Paris-Est MLV),

Master students supervised

- D.T. LE « Modeling abaltive materials with XFEM and phase fields methods», Université Gustage Eiffel (2020)
- D.M. Tran, «Computations on image-based models using multiscale approaches», Université Paris-Est (2019)
- M.V. Le, « Modeling of aircraft composites without scales separation", Université Paris-Est/SafranTech (2017)
- T. Zhang, «Modélisation de la fissuration dans les milieux poreux », Université Paris-Est/Saint Gobain Recherche (2016)
- Q. ZAN, «Modélisation et simulation numérique de la fissuration et de l'effondrement d'une matrice de gypse moussé », Université Paris-Est/Saint Gobain Recherche, 2015.
- D.A. HOANG, «Méthode de champs de phase pour la modélisation de l'endommagement des interfaces », Université Paris-Est, 2014.
- C. SHENG, «Calculs de microstructures complexes par éléments finis », Université Paris-Est, 2013.
- T.T. TRAN, «Homogénéisation numérique et modèles stochastiques pour les milieux hétérogènes sans séparation d'échelle », Université Paris-Est (2013)
- E. PETION, «Modélisation multi échelle numérique du fluage lié aux effets hydriques dans le béton », Université Paris-Est (2013)

- T.T. NGUYEN, "Développement de nouveaux schémas itératifs pour les calculs de microstructures obtenus à partir d'images de microtomographie", Université Paris-Est (2012)
- T.T. DANG, "Fissuration intergranulaire dans les milieux polycristallins par une approche XFEM/level-set", Université Paris-Est (2011)
- B.A. LE, "Homogénéisation de matériaux hétérogènes non linéaires par une approche numérique séquentielle à deux échelles", Université Paris-Est (2010)
- M.H. HA, "Calcul d'Estimateurs et de bornes de propriétés effectives d'échantillons de béton à partir d'images de tomographies", Université Paris-Est (2010)
- A. B. TRAN, « Modélisation par une approche de type XFEM/level-set des propriétés effectives des bétons avec la prise en compte de la microstructure granulaire et d'interfaces imparfaites », Université Paris-Est (2008)
- E. MONTEIRO, « Analyse de la diffusion non-linéaire dans les matériaux poreux par une approche multi-échelle », Université de Marne-la-Vallée (2006)
- T.H. PHUNG, « simulation numérique du soufflage des polymères par une méthode sans maillage », Université de Marne-la-Vallée. (2006)
- F. LEBEL « Etude du procédé RTM par différentes approches numériques », ENSAM Paris (2005)
- L.A. ILLOUL, « Extension de la méthode des éléments naturels contraints au cas 3D », ENSAM Paris (2004)

UNIVERSITY SERVICE ACTIVITIES

Université Paris-Est Marne-la-Vallée

- 2015 Committee of Research of UPEM
- 2012- Master coordinator, « Mechanics and Civil Engineering »
- 2012- LABEX MMCD executive committee
- 2012-2013 Chairman, recruitment committee
- 2008-2012 Master coordinator, « Projects in Civil Engineering »

PROFESSIONAL SERVICE ACTIVITIES

Editorial board in international Journals

[11] 2025 - **Computational Particle Mechanics** (CPM)
Springer

[10] 2023 – **International Journal for Numerical Methods in Engineering** (IJNME) Wiley
https://onlinelibrary.wiley.com/page/journal/10970207/homepage/editorialboard.html

[9] 2023 - **Advanced Modeling and Simulation in Engineering Sciences (AMSES)**
Springer

[8] 2022 - **Computer Methods in Applied Mechanics and Engineering (CMAME)**
Elsevier
https://www.journals.elsevier.com/computer-methods-in-applied-mechanics-and-engineering/editorial-board

[7] 2020 - **International Journal for Multiscale Computational Engineering**
Begell House
https://www.begellhouse.com/journals/multiscale-computational-engineering/editorial.html

[6] 2020 - **Forces in Mechanics**
Elsevier
https://www.journals.elsevier.com/forces-in-mechanics/editorial-board

[5] 2020 - **Mechanics of Size-dependent materials**
Springer

[4] 2018 - **Springer Nature Applied Sciences (SNAS)**
Springer Nature
(Guest editor of the Topical collection «Computational multiscale modelling and analysis in engineering and mechanics"

[3] 2016 – **Journal of Micromechanics and Molecular Physics**
http://www.worldscientific.com/page/jmmp/editorial-board

[2] 2015 - **Multiscale Multiphysics Mechanics**
http://www.techno-press.org/renewal/?page=journal_info&journal=mmm#

[1] 2013-2017 **Journal of Computational Engineering**
http://www.hindawi.com/journals/jcompeng/editors/

Guest editor of special issues in international journals

[2] 2019 **Advanced Modeling and Simulation in Engineering Sciences**: special issue on: "Computational Modeling of Complex Materials Across the Scales"
(Guest editors: Julien Yvonnet, Paul Steinmann (Erlangen-Nurnberg University, Marc Geers (Technical University of Eindhoven), and Andrew McBride (Univ. Glasgow)

[1] 2019 - **Computational Mechanics** : special issue on « Data-Driven Modeling and Simulation: Theory, Methods, and Applications" (Guest editors: Wing Kam Liu, Northwestern University, George Karniadakis, Brown University,
Shaoqiang Tang, Peking University, Julien Yvonnet, Université Paris-Est

Organization of international or national scientific conferences

International conferences

[6] J. Yvonnet, M. Geers, P. Steinmann, D. Kochmann, A. McBride (Chairman and local organizer), ECCOMAS Thematic Conference, " Computational modeling of complex materials across the scales IV (CMCS2025)", Champs-sur-Marne, 13-16 mai, 2025.

[5] M. Geers, V. Kouznetsova, J. Yvonnet (Co-chairman), P. Steinmann, A. McBride, ECCOMAS Thematic Conference, " Computational modeling of complex materials across the scales III (CMCS2023)", Eindhoven, 10-13 October, 2023.

[4] A. McBride, P. Steinmann, J. Yvonnet (Co-chairman), M.G.C. Geers, ECCOMAS Thematic Conference, " Computational modeling of complex materials across the scales II (CMCS2019)", Glasgow, 1-4 October, 2019.

[3] J. Yvonnet (Chairman and local organizer), M.G.C. Geers, P. Steinmann, ECCOMAS Thematic Conference, " Computational modeling of complex materials across the scales I (CMCS2017)", Paris, 7-9 November, 2017.

[2] V. Kouznetsova, J. Yvonnet (co-chairman), C. Miehe, EUROMECH Colloquium 559, “Multi-scale Computational Methods for Bridging scales in materials and structures, Eindhoven, The Netherlands, 23-25 February, 2015

[1] J. Yvonnet (Chairman and local organizer), M.G.C. Geers, F. Feyel, EUROMECH Colloquium 537, "Multi-scale Computational Homogenization of Heterogeneous Structures and materials", Université Paris-Est Marne-la-Vallée, 26-28 March 2012.

National conferences

[2] J. Yvonnet (Co-organisateur principal), Gisèle Seginger, Colloque EVOLUTION de l’Institut Universitaire de France, Marne-la-Vallée, France, 23-25 Mai, 2023 (100 participants).

[1] J. Yvonnet (Président du comité scientifique), F. Feyel, M. Potier-Ferry (vice-présidents), H. Zahrouni (president du comité d’organisation), 14e colloque national en calcul des structures (CSMA2019)", Giens, Frane, 13-17 Mai, 2019 (400 participants).

As organizer of Minisymposia

[22] Minisymposium organizer (Julien Yvonnet, Patrice Cartraud, Régis Cottereau, Djimédo Kondo), MS Approches multi-échelles en mécanique des solides, Congrès Français de Mécanique (CFM 2025) 25-29 Août 2025, Metz, France.
[21] Minisymposium organizer (Julien yvonnet, Laurent stainier, Modesar Shakoor, and Kerstin Weinberg), MS AI, Model reduction and data-driven techniques for multiscale modelling of materials, structures and processes, Digital Twins in Engineering & Artificial Intelligence and Computational Methods in Applied Science, DTE - AICOMAS 2025 February 17-21, 2025, Paris, France
[20] Minisymposium organizer (J. Yvonnet, K. Terada, P. Wriggers, M.G.C. Geers, K. Matous, P. Steinmann), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, The 9th European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS Congress 2024, 3-7 June 2024, Lisbon, Portugal..
[19] Minisymposium organizer (J. Yvonnet, K. Terada, P. Wriggers, M.G.C. Geers, K. Matous, P. Steinmann), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, The 16th World Congress on Computational Mechanics (WCCM2024) and 4th Pan American Congress on Computational Mechanics (PANACM2024), Vancouver, Canada, 21-26 July, 2024.

[18] Minisymposium organizer (Julien Yvonnet, Patrice Cartraud, Régis Cottereau, Djimédo Kondo), MS Approches multi-échelles en mécanique des solides, Congrès Français de Mécanique (CFM 2022) 29 Août- 2 septembre 2022, Nantes, France.
[17] Minisymposium organizer (J. Yvonnet, K. Terada, P. Wriggers, M.G.C. Geers, K. Matous, P. Steinmann), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, 15th World Congress on Computational Mechanics (WCCM-ECCOMAS) 31 July- 5 August 2022, Yokohama, Japan.
[16] Minisymposium organizer (J. Yvonnet, K. Terada, P. Wriggers, M.G.C. Geers, K. Matous, P. Steinmann), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMA2022) June 5-9, 2022, Oslo, Norway
[15] Minisymposium organizer (M.G.C. Geers, J. Yvonnet), Session Multi-scale plasticity, damage models & scale bridging, XVI International Conference on Computational Plasticity. Fundamentals and Applications - COMPLAS 2021, 7-10 September 202, Barcelona, Spain.
[14] Minisymposium organizer (J. Yvonnet, K. Terada, P. Wriggers, M.G.C. Geers, K. Matous, P. Steinmann), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, 14th World Congress on Computational Mechanics (WCCM-ECCOMAS) 11-15 January 2021, Paris, France, Virtual congress.
[13] Minisymposium organizer (J. Yvonnet, M.G.C. Geers, K. Terada, K. Matous), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, 13th World Congress on Computational Mechanics (**WCCM**) 2018, July 22-27, 2018, New-York, USA.
[12] Minisymposium organizer (J. Yvonnet, M.G.C. Geers, K. Terada), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, 6th European Conference on Computational Mechanics (**ECCM**) 2018, June 11-15, 2018, Glasgow, UK.
[11] Minisymposium organizer (J. Yvonnet, V. Kouznetsova, K. Terada, K. Matous), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, 14th US National Congress on Computational Mechanics (**USNCCM**) 2017, July 17-20 2017, Montreal, Canada.
[10] Minisymposium organizer (S. Brisard, J. Yvonnet), 2016 **Engineering Mechanics Institute International Conference** (EMI 2016), 25-27 October 2016, Metz, France.
[9] Minisymposium organizer (J. Yvonnet, M.G.D. Geers, K. Terada, P. Wriggers), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, VIIth European Congress on Computational Mechanics in Applied Sciences and Engineering (**ECCOMAS**) 2016, June 5-10 2016, Crete Island, Greece.
[8] Minisymposium organizer (J. Yvonnet, M.G.D. Geers, K. Terada, P. Wriggers, M. Cho), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, **USNCCM** 2015, July 26-30 2015, San Diego, USA.
[7] Minisymposium organizer (J. Yvonnet, M.G.D. Geers, K. Terada, P. Wriggers), MS Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, **WCCM** 2014, July 20-25 2014, Barcelona, Spain.
[6] Minisymposium organizer (H.L. Duan (Peking Univ. China), J. Yvonnet), MS 101 "Multi-scale modeling of surface effects in nanomaterials and heterostructures", 5th Asia Pacific Congress on Computational Mechanics & 4th International Symposium on Computational Mechanics (**APCOM** 2013), 11-14 December 2013, Singapore.
[5] Minisymposium organizer (J. Yvonnet, V. Kouznetsova (Eindhoven University of Technology), K. Terada (Tohoku Univ., Japon), P. Wriggers (Leibniz Univ. Hannover, Germany), M. Cho (Univ.

Séoul, South Korea)), Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, **USNCCM** 2013, July 22-25 2013, Rayleigh, USA
[4] Minisymposium organizer (J. Yvonnet, M. Geers (Eindhoven University of Technology), K. Terada (Tohoku Univ., Japon), P. Wriggers (Leibniz Univ. Hannover, Germany)), MS102 Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials, **ECCOMAS** 2012, September 10-14, 2012, Vienna, Austria.
[3] Minisymposium organizer (J. Yvonnet, K. Terada (Tohoku Univ., Japon), P. Wriggers (Leibniz Univ. Hannover, Germany), J. Fish (Univ. of Columbia, USA)), MS-075 -Multiscale Computational Homogenization For Bridging Scales In The Mechanics And Physics Of Complex Materials, **WCCM** 2012, 8-13, July 2012, Sao Paulo, Brazil.
[2] Minisymposium organizer (J. Yvonnet, M. Dao (M.I.T., USA), V. Tan (National University of Singapore, Singapour))- Special session: "Multiscale Computational Nanomechanics", Sixth **M.I.T. Conference** on Computational Fluid and Solid Mechanics, Massachusets Institute of Technology, June, 15-17, 2011, Cambridge, USA.
[1] Minisymposium organizer (J. Yvonnet, H.S. Park (University of Boston, USA), V. Tan (National University of Singapore, Singapour))- S25: "Multiscale methods for modelling surface effects on nanosystems and nanostructured materials", IV European Conference on Computational Mechanics (**ECCM** IV), May, 16-21, 2010, Paris, France.

As part of the scientific committee

[16] Congrès français de mécanique 2022, 29 août-2 septembre 2022, Nantes, France.
[15] XVII International Conference on Computational Plasticity, COMPLAS 2023, 5-7 September, 2023.
[14] CIGOS - the International Conference series on Geotechnics, Civil Engineering Works and Structures, Ha Long city, Vietnam, Oct. 28-29, 2021
[13] 1st IACM conference for machine learning and digital twins for computational science and engineering, San Diego, USA, Sept. 26-29, 2021.
[12] Construction Digitalisation for Sustainable Development: Transforming through Innovation (CDSD2020), Hanoï, Vietnam, October 2020.
[11] Innovation for Sustainable Infrastructures (**CIGOS 2019**), Hanoï, Vietnam, Oct. 31-Nov.1, 2019.
[10] 9th International Conference on Computational Methods (**ICCM2018**), Rome, Italy, August 6-10, 2018.
[9] The 13th World Congress on Computational Mechanics (**WCCM XIII**) / 2nd Pan American Congress on Computational Mechanics (PANACM II), New York, USA, July 22-27, 2018. [8] International scientific committee member, 2016 Engineering Mechanics Institute International Conference (**EMI** 2016), 25-27 October 2016, Metz, France.
[7] National scientific committee member, 13th Colloque en calcul de structures, **CSMA**, May 2017, Giens, France.
[6] International scientific committee member, The 10th international conference on Mechanics of Time Dependent Materials (**MTDM** 2016). http://mtdm2016.ensam.eu/node/42.
[5] International scientific committee member, The 6th International Conference on Computational Mechanics (**ICCM2015**, Auckland, New-Zealand, July 14-17, 2015.
[4] International scientific committee member, **ECCOMAS** Extended discretization methods (**X6DMS** 2015) Ferrara, Italy, 9-11 Septembre 2015.
[3] National scientific committee member, 12th Colloque en calcul de structures, **CSMA**, May 18-22, 2015, Giens, France.

[2] International committee member, The 5th International Conference on Computational Methods (**ICCM2014**), Cambridge, England, 28-30 Juillet 2014.
[1] International committee member, European Congress on Computational Methods in Applied Sciences and Engineering (**ECCOMAS**) Thematic conference : Composites with micro- and nano structures (CMNS) – Computational Modeling and Experiments (Liptvsky Mikulas, Slovakia, 28 – 31 Mai 2007).

Served as a reviewer for the following journals

Advanced Modeling and Simulation in Engineering Science
Chinese Physics Letters
Composites Sciences and Technology
Computational Materials Science
Computational Mechanics
Computer Methods in Applied Mechanics and Engineering
Comptes Rendus de Mécanique
Continuum Mechanics and Thermomechanics
European Journal of Computational Mechanics
European Journal of Environmental and Civil Engineering
European Journal of Mechanics –A/Solids
Engineering Computations
Finite Element in Analysis and Design
Interaction and Multiscale Mechanics
International Journal for Numerical Methods in Engineering
International Journal of Solids and Structures
Journal of Computational Physics
Journal of Engineering Mechanics
Journal of Mathematical Analysis and Applications
Journal of the Mechanics and Physics of Solids
Journal of Medical Engineering
Materials
Meccanica
Mechanics and Industry
Modeling and Simulation in Materials Science and Engineering
Multiscale Modeling and Simulation
Numerical Heat Transfer
Philosophical Magazine
Proceedings of the Royal Society A

COMMUNICATIONS IN INTERNATIONAL AND NATIONAL (FRENCH) CONFERENCES – FULL LIST

[182] (Plenary lecture) J. Yvonnet, Machine learning-based multiscale fracture, European Mechanics of Materials Conferences (EMMC 20), Florence, Italy, 27-29 May 2026.

[181] N. Zeaiter, J. Yvonnet, B. Bary, G. La Valle, Multiscale thermo-elastic homogenization of hydrating binders for nuclear waste storage application, EURO-C 2026, Seefeld in Tirol, Austria, 9'12 March 2026.

[180] J. Yvonnet, S. Chaouch, Apprentissage automatique non supervisé basé sur le regroupement pour accélérer les simulations multiéchelles non linéaires avec des variables internes, 26e Congrès Français de Mécanique, Metz, France, 25-29 aout 2025.
[179] Z. Chafia, J. Yvonnet, J. Bléyer, Méthode multi-échelle basée sur les données pour la simulation de l'endommagement anisotrope des structures hétérogènes, 26e Congrès Français de Mécanique, Metz, France, 25-29 aout 2025.
[178] Z. Chafia, J. Yvonnet, J. Bléyer, Data-Driven Based Multiscale Strategy for reducing Anisotropic Damage Computations in Heterogeneous Structures, 18th U.S. National Congress on Computational Mechanics (USNCCM18), Chicago, USA, July 20-24, 2025.
[177] A. Montazel, F. Laurin, J. Rannou, S. Mousillat, J. Yvonnet, Étude expérimentale de la rupture en compression de structures tissées 3D à matrice organique en présence d'effets d'échelle, Journées Nationales sur les Composites (JNC) 2025, 30 juin-2 juillet 2025, Gif-sur-Yvette, France.

[176] (Plenary lecture) J. Yvonnet, Machine learning-based multiscale fracture modelling, 1st Hellenic-Italian Conference on Computational Mechanics, Biomechanics and Mechanics of Materials (HICOMP), Rhodes Island, Greece, 19-21 June, 2025.

[175] Z. Chafia, J. Yvonnet, J. Bléyer, S. Vincent, S. El-Ouafa, Super-computer implementation of the phase field method to fracture for billion-degrees of freedom simulations in heterogeneous structures, The 8th International Conference on Computational Modeling of Fracture and Failure of Materials and Structures (CFRAC 2025), Porto, Portugal, 4-6 June, 2025.
[174] J. Yvonnet, A clustering approach to accelerate FE2 Anisotropic fracture simulations, ECCOMAS Thematic Conference: Computational Modeling of Complex Materials across the Scales, May 13-16, 2025, Champs-sur-Marne, France.

[173] A. Montazel, F. Laurin, J. Rannou, S. Mousillat, J. Yvonnet, Measurement of the compressive fracture toughness of 3d woven carbon fiber composites exhibiting size effects, COMPTEST 2025, 12th International Conference on Composite Testing and Model Identification, Riga, Latvia, 21-23 May, 2025.
[172] (Semi-Plenary lecture) J. Yvonnet, Machine learning-based multiscale fracture, 3rd IACM Digital Twins in Engineering Conference (DTE 2025) & 1st ECCOMAS Artificial Intelligence and Computational Methods in Applied Science (AICOMAS 2025), Paris, 17-21 February 2025, France.

[171] J. Yvonnet, P. Li, Qi-Chang, He, Machine-learning-based modelling of anisotropic damage from micro scale fracture simulations, EUROMECH COLLOQUIUM 642 International Colloquium on Multiscale and Multiphysics Modelling for Advanced and Sustainable Materials, September 23rd-27th 2024, Rome, Italy

[170] J. Yvonnet, P. Li, Qi-Chang He, Data-driven modelling of anisotropic damage from RVE fracture simulations, The 9th European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS Congress 2024, 3-7 June 2024, Lisbon, Portugal.

[169] S. Chaouch, J. Yvonnet, An unsupervised machine learning approach to reduce nonlinear FE2 multiscale calculations using macro clustering, The 9th European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS Congress 2024, 3-7 June 2024, Lisbon, Portugal.

[168] A. Ketata, J. Yvonnet, N. Feld, F. Detrez, Augustin Parret-Freaut, Heterogeneous structures computation with microstructure gradients using a homogenization approach with regularized relocalization, The 9th European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS Congress 2024, 3-7 June 2024, Lisbon, Portugal.

[167] Z. Chafia, J. Yvonnet, J. Bleyer, A machine learning based multiscale Approach to the prediction of the Anisotropic damage of structures, The 9th European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS Congress 2024, 3-7 June 2024, Lisbon, Portugal.

[166] S. Chaouch, J. Yvonnet, Réduction des calculs non-linéaires multi-échelles FE2 en utilisant un macro-clustering, CSMA 2024 16ème Colloque National en Calcul des Structures, 13-17 Mai 2024, Giens, France.

[165] X. Lu, F. Detrez, J. Yvonnet, J. Bai, Identification des propriétés élastiques locales des interfaces et interphases d'un nanocomposite polymère graphène, CSMA 2024 16ème Colloque National en Calcul des Structures, 13-17 Mai 2024, Giens, France.

[164] A. Ketata, J. Yvonnet, F. Detrez, N. Feld, A. Parret Freaut, Calcul de structures hétérogènes avec gradients de microstructure par une approche d'homogénéisation avec re-localisation régularisée, CSMA 2024 16ème Colloque National en Calcul des Structures, 13-17 Mai 2024, Giens, France.

[163] Z. Chafia, J. Yvonnet, J. Bleyer, Une approche multi-échelle basée sur les données pour la prédiction
de l'endommagement anisotrope des structures, CSMA 2024 16ème Colloque National en Calcul des Structures, 13-17 Mai 2024, Giens, France.

[162] Z. Chafia, J. Yvonnet, J. Bleyer, Machine learning-based multiscale approach to anisotropic damage in quasi-brittle heterogeneous structures, The 16th World Congress on Computational Mechanics (WCCM2024) and 4th Pan American Congress on Computational Mechanics (PANACM2024), Vancouver, Canada, 21-26 July, 2024.

[161] S. Chaouch, J. Yvonnet, J. Bleyer, Macro clustering for accelerating FE2 multiscale simulations of nonlinear composites considering elastoplasticity, viscoelasticity and damage, The 16th World Congress on Computational Mechanics (WCCM2024) and 4th Pan American Congress on Computational Mechanics (PANACM2024), Vancouver, Canada, 21-26 July, 2024.

[160] (Keynote Lecture) J. Yvonnet, Clustering methods for multiscale modelling of anisotropic damage, The 16th World Congress on Computational Mechanics (WCCM2024) and 4th Pan American Congress on Computational Mechanics (PANACM2024), Vancouver, Canada, 21-26 July, 2024.

[C159] (Plenary lecture) J. Yvonnet, ECCOMAS Reduced order models for fracture and path-dependent multiscale simulations: Macro Clustering and data-driven approaches, 6th International Workshop on Model reduction Techniques (MORTECH), Paris Saclay, 22-24 November 2023, France.

[C158] (Invited lecture) J. Yvonnet, Q.-C. He, P. Li, Data-driven harmonic analysis Damage modeling (DDHAD) for multi-scale modelling of anisotropic damage, Seventh International Conference on Computational Modeling of Fracture and Failure of Materials and Structures (CFRAC 2023), Prague, Czechia, 21-23 June, 2023.

[C157] (Invited lecture) J. Yvonnet, Unsupervised machine learning based on clustering for accelerating nonlinear multiscale simulations with internal variables, 14th International Symposium on Continuum Models and Discrete Systems, Paris, France – 26-30 June 2023.

[C156] S. Chaouch, J. Yvonnet, A k-means clustering FE2 method based on unsupervised machine learning for nonlinear multiscale calculations, XVII International conference on Computational Plasticity (COMPLAS), Barcelona, Spain, 5-7 September, 2023

[C155] J. Abou eid,, L. Adelaide, V. Bouteiiler, J. Yvonnet, Phase field modeling of corrosion-induced cracking in reinforced concrete structures, XVII International conference on Computational Plasticity (COMPLAS), Barcelona, Spain, 5-7 September, 2023

[C154] X. Chen, J. Yvonnet, S. Yao, Topology optimization of dynamic flexoelectric structures by isogeometric analysis, The 15th World Congress of Structural and Multidisciplinary Optimisation (WCSMO-15), Cork, Ireland 5th-9th June 2023

[C153] S. Chaouch, J. Yvonnet, An Unsupervised Machine Learning Approach to Reduce Nonlinear Multiscale Calculations Using Clustering, 17th U. S. National Congress on Computational Mechanics (USNCCM), Albuquerque, New Mexico, July 23-27, 2023

[C152] (invited lecture) J. Yvonnet, Q.-C. He, P. Li, Data-driven harmonic analysis for multi-scale construction of arbitrary anisotropic damage models with minimal number of internal variables, IUTAM Symposium on Data-Driven Mechanics, Paris, October 26-28, 2022.

[C151] (Plenary lecture) J. Yvonnet, Microcracking in heterogeneous materials, 8th international conference on "Advanced COmputational Methods in Engineering (ACOMEN)" Liège, Belgium, August 31- September 2, 2022.

[C150] J. Yvonnet, M.A. Benaimeche, S. Chaouch, B. Bary, Q.-C. He, Fast FE2 nonlinear multiscale simulations with loading path-dependent behaviors using k-means, June 5-9, 2022, The 8th European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS Congress 2022, Oslo, Norway.

[C149] (Plenary lecture) J. Yvonnet, Microfissuration des matériaux hétérogènes, 15e colloque national en calcul des structures, Giens, France , May 16-22, 2022

[C148] J. Yvonnet, Introduction à l'homogénéisation numérique par éléments finis, 17-21 January 2022, 2022, Colloque MECAMAT Matériaux architurés, Aussois, France (Special invited course)

[C147] J. Yvonnet, X. Lu, L. Papadopoulos, I. Kalogeris, V. Papadopoulos, A Stochastic FE2 Data-Driven Method for Nonlinear Multiscale Modeling, Mechanistic Machine Learning and Digital Twins

for Computational Science, Engineering & Technology, Sept. 26-29 2021, San Diego, USA (online participation)
[C146] M. A. Benaimeche, J. Yvonnet, B. Bary, Q.-C. He, Two-scale damage modeling in nuclear waste packages with phase field modeling of microcracking due to corrosion product expansion, XVI International Conference on Computational Plasticity, 7-9 Sept. 2021, Barcelona, Spain.
[C145] J. Yvonnet, P. Li, N. Nguyen, D. Hun, J. Guilleminot, Identification of macro phase field fracture models from micro and heterogeneous structure calculations, XVI International Conference on Computational Plasticity, 7-9 Sept. 2021, Barcelona, Spain (online participation)
[C144] P. Li, J. Yvonnet, C. Combescure, M. Nourai, H. Makich, An anisotropic elastoplastic phase field damage model for 3D printed materials and its experimental verification, XVI International Conference on Computational Plasticity, 7-9 Sept. 2021, Barcelona, Spain (online participation)
[C143] J. Yvonnet (invited lecture), Enhanced flexoelectricity in heterogeneous piezoelectric composites using topology optimization, IUTAM Symposium on IUTAM Symposium on Generalized continua emerging from microstructures, 19-23 July 2021, Paris, France.
[C142] P. Li, J. Yvonnet, C. Combescure, Phase-field modeling of anisotropic brittle fracture in directional porous polymer, 14th World Congress on Computational Mechanics (WCCM-ECCOMAS) 2021 –Virtual Congress 11-15 janvier 2021.
[C141] M. V-Le, J. Yvonnet, F. Detrez, N. Feld, coarse mesh condensation multiscale (CMCM) method for full-field simulation of nonlinear heterogeneous structures, 14th World Congress on Computational Mechanics (WCCM-ECCOMAS) 2021 –Virtual Congress 11-15 janvier 2021.
[C140] J. Yvonnet, recent advances in topology optimization of heterogeneous structures for fracture propagation resistance, 14th World Congress on Computational Mechanics (WCCM-ECCOMAS) 2021 –Virtual Congress 11-15 janvier 2021.
[C139] (invited lecture) J. Yvonnet, X. Lu, F. Detrez, J. Bai, A two-scale FE2 method using neural networks, MORTech 2019 - 5th international Workshop on Reduced Basis, POD and PGD Model Reduction Techniques, 20-22 Nov. 2019, Paris, France.

[C138] B. Haddag, I. Benchikh, M. Nouari, H. Makich, M. Bornert, J. Yvonnet, Identification des propriétés d'élasticité d'un polymère obtenu par fabrication additive SLS à partir d'une modélisation du volume élémentaire représentatif, 24ème Congrès Français de Mécanique, 26-30 août 2019, Brest, France.

[C137] (keynote lecture)J. Yvonnet, T.T. Nguyen, M. Bornert, C. Chateau, Phase field method for microcracking simulations in concrete microstructure models obtained from 3D microtomography images, 10th International Conference on Fracture Mechanics of Concrete and Concrete Structures, FraMCoS-X, 23-26 juin 2019, Bayonne, France.

[C136] D.H. Hun, J. Guilleminot, J. Yvonnet, A. Dadda, A.M. Tang, M. Bornert, Computational modeling of crack propagation in a heterogeneous medium under drying conditions, Engineering Mechanics Institute 2019 (EMI) conference 18-21 June. 2019, Caltech, USA.
[C135] M.V. Le, J. Yvonnet, N. Feld, F. Detrez, The Reduced Condensation Domain Decomposition (RCDD) Method for simulations of heterogeneous structures, Engineering Mechanics Institute 2019 (EMI) conference 18-21 June. 2019, Caltech, USA.
[C134] T.T. Nguyen, J. Yvonnet, D. Waldmann, Phase field modeling of crack initiation and propagation under complex loading, VI International Conference on Computational Modeling of Fracture and Failure of Materials and Structures (CFRAC 2019), 12-14 June. 2019, Braunschweig, Germany.

[C133] T.T. Nguyen, J. Yvonnet, D. Waldmann, Q.C. He, Phase field modeling of interfacial crack propagation in quasi-brittle heterogeneous materials, VI International Conference on Computational Modeling of Fracture and Failure of Materials and Structures (CFRAC 2019), 12-14 June. 2019, Braunschweig, Germany.
[C132] D.Da, J. Yvonnet, L. Xia, Optimisation topologique de composites pour maximiser la résistance à la fracture, 14ème Colloque National en Calcul des Structures (CSMA 2019), 13-17 Mai 2019, Giens, France.
[C131] D.A. Hun, J. Yvonnet, J. Guilleminot, M. Bornert, Approche stochastique multi-échelles de la propagation de fissures dans les matériaux hétérogènes, 14ème Colloque National en Calcul des Structures (CSMA 2019), 13-17 Mai 2019, Giens, France.
[C130] M.V. Le, J. Yvonnet, N. Feld, F. Detrez, Une méthode Quasi-FE2 pour la résolution de structures composites, 14ème Colloque National en Calcul des Structures (CSMA 2019), 13-17 Mai 2019, Giens, France.
[C129] J. Yvonnet (Plenary lecture), Numerical modeling of fracture in highly heterogeneous materials, XXXIX Ibero-Latin American Congress on Computational Methods in Engineering (CILAMCE 2018), Compiègne, France, 11-14 November 2018.
[C128] N. Nguyen, J. Yvonnet, J. Rethoré, Macroscopic Models For Crack Propagation In Heterogeneous Lattices Based On Phase Field Method, 13th World Congress on Computational Mechanics, New York, USA, 22-27 July 2018.
[C127] K. Kodjo, J. Yvonnet, M. Karkri, K. Sab, Multiscale Thermomechanical Analysis of Composites Containing Phase Change Materials, 13th World Congress on Computational Mechanics, New York, USA, 22-27 July 2018.
[C126] D.-A. Hun, J. Guilleminot, J. Yvonnet, M. Bornert, Multi-scale Crack propagation in Random Heterogeneous media, 13th World Congress on Computational Mechanics, New York, USA, 22-27 July 2018.
[C125] J. Yvonnet, Topology optimization of particle-matrix composites for optimal fracture resistance, 13th World Congress on Computational Mechanics, New York, USA, 22-27 July 2018.
[C124] M.V. Le, J. Yvonnet, N. Feld, F. Detrez, a filter-based multiscale homogenization method for composite structures without scale separation, 6th European Conference on Computational Mechanics (ECCM6), Glasgow, UK, 11-15 June 2018.
[C123] (Keynote lecture) J. Yvonnet, D.Da, L. Xia, G. Li, Topology optimization for maximizing the fracture resistance of quasi-brittle composites, 6th European Conference on Computational Mechanics (ECCM6), Glasgow, UK, 11-15 June 2018.
[C122] K. Kodjo, J. Yvonnet, K. Sab, M. Karkri, Concurrrent two-scale analysis of composites embedding phase change particles, 16th European Mechanics of Materials Conference (EMMC16), Nantes, France, 26-28 March 2018.
[C121] (Invited lecture) J. Yvonnet, T.T. Nguyen, M. Bornert, C. Chateau, Fissuration dans les microstructures de materiaux cimentaires : outils de simulation par la méthode de champ de phase, Colloque national MECAMAT Aussois « Matériaux Numériques », Aussois, France, 22-27 janvier 2018.
[C120] M.V. Le, J. Yvonnet, N. Feld, C. Combescure, filter-based computational homogenization Method for composites structures without Scale separation assumption, ECCOMAS Thematic Conference: Computational Modeling of Complex Materials across the Scales (CMCS 2017), 7-9 November 2017.
[C119] X. Lu, J. Yvonnet, F. Detrez, J. Bai, multiscale modeling of the electrical and mechanical properties of graphene-reinforced nanocomposites, ECCOMAS Thematic Conference: Computational Modeling of Complex Materials across the Scales (CMCS 2017), 7-9 November 2017.

[C118] N. Nguyen, J. Yvonnet, J. Rethoré, numerical identification of homogeneous phase field models to quasi-brittle fracture in heterogeneous periodic media, ECCOMAS Thematic Conference: Computational Modeling of Complex Materials across the Scales (CMCS 2017), 7-9 November 2017.
[C117] K. Kodjo, J. Yvonnet, K. Sab, M. Karkri, thermomechanical modeling of materials embedding phase change particles, ECCOMAS Thematic Conference: Computational Modeling of Complex Materials across the Scales (CMCS 2017), 7-9 November 2017.
[C116] (Keynote lecture) J. Yvonnet, T.T. Nguyen, M. Bornert, C. Chateau, L. Xia, Modelling of microcracking in image-based models of highly heterogeneous materials using the phase field method, 7th GACM Colloquium on Computational Mechanics, Stuttgart, Germany, 11-13 October, 2017.
[C115] X. Lu, J. Yvonnet, F. Detrez, J. Bai, Computational Homogenization of the Nonlinear Electrical Behavior of Graphene/Polymer Nanocomposites, 14th US National Congress on Computational Mechanics, Montreal, Canada, July 17-20, 2017.
[C114] (Keynote lecture) J. Yvonnet, L. Xia, S. Ghabezloo, Phase Field Modeling of Hydraulic Fracturing with Interfacial Damage in Highly Heterogeneous Fluid-Saturated Porous Media, 14th US National Congress on Computational Mechanics, Montreal, Canada, July 17-20, 2017.
[C113] J-L. Adia, J. Yvonnet, Q.-C. Hen N.-C. Tran, J. Sanahuja, Elastic shrinkage-swelling modeling in porous microstructures: a combined Finite Elements-Lattice Boltzmann-numerical approach. 6th Biot Conference on Porpomechanics, Paris, France, Nantes , July 9-13 2017.
[C112] N. Nguyen, J. Yvonnet, Multiscale, Phase field modeling of brittle cracking in heterogeneous materials, Fifth International conference on Computational Modeling of fracture of materials and structures, June 14-16, 2017.
[C111] J. Yvonnet, L. Xia, S. Ghabezloo, Phase field modeling of hydraulic fracturing with interfacial damage in highly heterogeneous fluid-saturated porous media, Fifth International conference on Computational Modeling of fracture of materials and structures, Nantes, June 14-16, 2017.
[C110] J-L. Adia, J. Yvonnet, Q.-C. Hen N.-C. Tran, J. Sanahuja, Incremental numerical homogenization of the aging viscoelasticity in unsaturated porous microstructures, VII International conference on Coupled problems in Science and Engineering, Rhodes Island; Greece, 12-14 June 2017.
[C109] X. Lu, J. Yvonnet, F. Detrez, J. Bai, Computation of effective nonlinear coupled electro-mechanical properties of graphene-reinforced nanocomposites, VII International conference on Coupled problems in Science and Engineering, Rhodes Island; Greece, 12-14 June 2017.
[C108] N. Nguyen, J. Yvonnet, Multiscale Phase field modeling of brittle cracking in heterogeneous materials, 13e Colloque national en calcul de structures, Giens, France, 15-19 mai 2017.
[C107] J. Yvonnet, L. Xia, S. Ghabezloo, Phase field modeling of hydraulic fracture in heterogeneous media with interfacial damage, 13e Colloque national en calcul de structures, Giens, France, 15-19 mai 2017.
[C106] (invited lecture) J. Yvonnet, T.T. Nguyen, L. Xia, M. Bornert, C. Chateau, Q.Z. Zhu, Modeling interactions between bulk and interfacial cracking in concrete microstructures with the phase field method, 3e journées Matériaux Numériques, Tours, France, 31 janvier-2 février 2017.
[C105] L. Xia, J. Yvonnet, D. Da, Topology optimization of composite structures for fracture resistance with phase field modeling of crack propagation, 2th World Congress of Structural and Multidisciplinary Optimisation, Braunschweig, Germany, 5 - 9 June 2017.
[C104] J. Yvonnet, T.T. Nguyen, M. Bornert, C. Chateau, Phase field modeling of complex matrix/interfacial crack propagation in complex microstructures obtained from microtomography images, 2016 Engineering Mechanics Institute Conference, Metz, France, 25-27 octobre 2016.
[C103] S. Nezamabadi, J. Yvonnet, A filter-based computational homogenization for nonlinear heterogeneous cellular media, 2016 Engineering Mechanics Institute Conference, 25-27 octobre 2016.

[C102] J.-L. Adia, J. Yvonnet, Q.-C. He, N.-C. Tran, J. Sanahuja, Numerical homogenization for unsaturated poroelasticity with surface tension effects. The International Conference on Technological Innovations in Nuclear Civil Engineering, Paris, France, 5-9 septembre 2016.
[C101] L. Xia, J. Yvonnet, S. Ghabezloo, Phase field modeling of hydraulic fracture propagation in highly heterogeneous fluid-saturated porous media, The 15th European Mecahnics of Materials Conference, Brussel, Belgium, 7-9 September 2016.
[C100] T.T. Nguyen, J. Yvonnet, M. Bornert, C. Chateau, Q.-Z. Zhu, A phase-field method for computational modeling of interfacial damage interacting with crack propagation in realistic microstructures obtained by microtomography. The 12th World Congress on Computational Mechanics, Seoul, Korea, 24-29 July 2016.
[C99] J.-L. Adia, J. Yvonnet, Q.-C. He, J. Sanahuja, N.-C. Tran, Unsaturated poromechanical behavior of cement-based materials, homogenized using direct numerical simulations, ECCOMAS Congress 2016, Crete Island, Greece, 5-10 June 2016.
[C98] X. Lu, J. Yvonnet, F. Detrez, J. Bai, A computational approach to quantify the electric conductivity of graphene-reinforced nanocomposites, ECCOMAS Congress 2016, Crete Island, Greece, 5-10 June 2016.
[C97] A. Tognevi, J. Yvonnet, M. Guerich, A multi-scale modeling method for heterogeneous structures without scale separation using a filter-based homogenization scheme, ECCOMAS Congress 2016, Crete Island, Greece, 5-10 June 2016.
[C96] T.H. Hoang, M. Guerich, J. Yvonnet, A New Numerical Incremental Homogenization Approach to Calculate Elastoplastic Heterogeneous Structures, ECCOMAS Congress 2016, Crete Island, Greece, 5-10 June 2016.
[C95] (Keynote Lecture) J. Yvonnet, T.T. Nguyen, M. Bornet, C. Chateau, Q.Z. Zhu, "Phase field modeling of complex matrix/interfacial crack propagation in complex microstructures obtained from microtomography images", ECCOMAS Congress 2016, Crete Island, Greece, 5-10 June 2016.
[C94] (invited lecture) J. Yvonnet, Modeling interactions between bulk and interfacial cracking in concrete microstructures with the phase field method, Workshop "Regularized models of brittle fracture", Paris, France, 2 May 2016.

[C93] J.-L. Adia, J. Yvonnet, Q.-C. He, J. Sanahuja, N.-C. Tran, Unsaturated poromechanical behavior of cement-based materials, homogenized using direct numerical simulations, The 10th International Conference on the Mechanics of Time Dependent Materials, Paris, France, 17-20 mai 2016.

[C92] J. Yvonnet, A.B. Tran, Q.-C. He, J. Sanahuja, C. Toulemonde, A simple decoupled computational homogenization for linear heterogeneous viscoelastic materials, The 10th International Conference on the Mechanics of Time Dependent Materials, Paris, France, 17-20 mai 2016.
[C91] M. Bornert, P. Aimedieu, N. Lenoir, C. Chateau, T.T. Nguyen, J. Yvonnet, J.F. Bruchon, J.M. Pereira, M. Vandamme, P. Delage, Expérimentation hydro---mécanique in situ sous microtomographie: quelques applications en génie civil, XIe Colloque Rayons X & Matière, Grenoble, France, 1-4 décembre 2015.
[C90] (Invited lecture) J Julien Yvonnet, A. Tognevi, Guy Bonnet, M. Guerich, A filter-based computational homogenization method for problems with arbitrary scale separation, Workshop on Computational Mechanics of Generalized Continua and Applications to Materials with Microstructure,Catania, Italy, 29-31 October, 2015.

[C89] (Keynote lecture) J. Yvonnet, B.A. Le, Q.-C. He, Neural networks for computational homogenization and optimization of hyperelastic heterogeneous materials, 13th US National Congress on Computational Methods (USNCCM 13), San Diego, USA, 26-30 July, 2015.

[C88] T.T.Nguyen, J.Yvonnet, Q.-Z.Zhu, M. Bornert, C. Chateau, Phase field modeling of complex microcracking in voxel-based models of cementitious materials, 13th US National Congress on Computational Methods (USNCCM 13), San Diego, USA, 26-30 July, 2015.

[C87] A. Tognevi, M. Karkri, J. Yvonnet, M. Almaadeed, I. Krupa, Computational homogenization for the thermo-mechanical analysis of phase change composite materials, 18th International Conference on Composite Structures (ICCS18), Lisbonne, Portugal, 15-18 June, 2015.

[C86] T.H. Hoang, M. Guerich, J. Yvonnet, Effective size of RVE for finite element analysis of structures made of nonlinear random composites, 18th International Conference on Composite Structures (ICCS18), Lisbonne, Portugal, 15-18 June, 2015.

[C85] T.H. Hoang, M. Guerich, J. Yvonnet, An incremental multilevel computational homogenization method for elastoplastic composites, 18th International Conference on Composite Structures (ICCS18), Lisbonne, Portugal, 15-18 June, 2015.

[C84] J. Yvonnet, A. Tognevi, G. Bonnet, M. Guerich, A filter-based computational homogenization method for handling non-separated scales problems, 12e Colloque National en Calcul des Structures, Presqu'île de Giens, 18-22 May, 2015.

[C83] T.T. Nguyen, J. Yvonnet, Q.-Z. Zhu, M. Bornert, C. Chateau, Crack nucleation and propagation in highly heterogeneous microstructures models based on X-ray CT images of real materials, 12e Colloque National en Calcul des Structures, Presqu'île de Giens, 18-22 May, 2015.

[C82] F. Detrez, J. Yvonnet, Q.-C. He, Multiscale modeling and molecular dynamics characterization of size-effects in thin films polymers, VI International Conference on Coupled Problems in Science and Engineering, San Servolo Island, Venice, Italy, 18-20 May, 2015.

[C81], T.T. Nguyen, J. Yvonnet, M. Bornert, C. Chateau, A phase-field method for microcracking simulation in concrete microstructure models obtained from microtomography images, 1st Pan-American congress on computational mechanics, Buenos Aeres, Argentina, 27-29 April, 2015.

[C80] (invited lecture) J. Yvonnet, A. Tognevi, G. Bonnet, M. Guerich, Filter-based computational homogenization, 1st Pan-American congress on computational mechanics, Buenos Aeres, Argentina, 27-29 April, 2015.

[C79] J. Yvonnet, B.A. Le, Q.-C. He, Computational homogenization with Neural Networks, Euromech 559 "Multi-scale computational homogenization methods for bridging scales in materials and structures, Eindhoven, The Netherlands, 23-25 February, 2015.

[C78] T.T. Nguyen, M. Bornert, C. Chateau, J. Yvonnet, Q.-Z. Zhu, 3D Detection of damage evolution in porous brittle cement based materials, 16th International Conference on Experimental Mechanics (ICEM16), Cambridge, 7-11 July, 2014.

[C77] (Semi-plenary lecture) J. Yvonnet, Computational homogenization of micro and nano-structured materials: contributions to recent challenges, 11th World Congress on Computational Mechanics, Barcelona, 20-25 July, 2014.

[C76] (Keynote lecture) J. Yvonnet, Coarse-graining homogenization of heterogeneous media with non-separated scales,11th World Congress on Computational Mechanics, Barcelona, 20-25 July, 2014.

[C75] A. Tognevi, M. Guerich, J. Yvonnet, Computational modeling of heterogeneous structures without scale separation: an approach based on nonlocal filter-based homogenization,11th World Congress on Computational Mechanics, Barcelona, 20-25 July, 2014.

[C74] T.T. Nguyen, J. Yvonnet, Q.-Z. Zhu, M. Bornert, C. Chateau, Crack nucleation and propagation in highly heterogeneous materials models obtained from microtomography images using phase field method,11th World Congress on Computational Mechanics, Barcelona, 20-25 July, 2014.

[C73] Y. Cong, S. Nezamabadi, H. Zahrouni, J. Yvonnet, multiscale modeling of shells with heterogeneous micro and nano structures, ,11th World Congress on Computational Mechanics, Barcelona, 20-25 July, 2014.

[C72] T.T. Nguyen, J. Yvonnet, Q.-Z. Zhu, M. Bornert, C. Chateau, A simplified and accelerated phase field method for crack nucleation and propagation in highly heterogeneous materials, 20th European Conference on Fracture, Trondheim, Norway, June 30- July 4, 2014.

[C71] T.H. Hoang, J. Yvonnet, M. Guerich, «A procedure to determine the size of RVE for nonlinear random heterogeneous material based on an incremental homogenization method", Conference on Mechanics of Composites (MECHCOMP2014), Stony Brook, USA, June 8-12, 2014.

[C70] (Invited lecture) J. Yvonnet, G. Bonnet, «Coarse-graining/nonlocal homogenization of heterogeneous materials with arbitrary scale separation: a consistent scheme based on filters", IUTAM Symposium on Connecting Multiscale Mechanics to Complex Material, Evanston, Illinois, USA, May 14-16, 2014.

[C69] (Keynote lecture) M. T. Hoang, J. Yvonnet, G. Chambaud, A. Mitrushchenkov, Multiscale modeling of piezoelectric nanowires with surface effects based on ab initio calculations, 5th Asia Pacific Congress on Computational Mechanics and 4th International Symposium on Computational Mechanics, Singapore, December 11-14, 2013.

[C68] T.H. Hoang, J. Yvonnet, M. Guerich, "Determination of the size of an RVE for nonlinear random composites", 3rd International Conference on Material Modelling (ICMM3), Warsaw, Poland, September 8-11, 2013.

[C67] (Keynote lecture) J. Yvonnet, T.T. Nguyen, V. Monchiet, Q.-Z. Zhu, A Fourier-free approach to solve linear and nonlinear microstructural problems defined over large grids of voxels, 12th US National Congress in Computational Mechanics (USNCCM12), Raleigh, USA, July 22-25, 2013.

[C66] Y. Cong, H. Zahrouni, J. Yvonnet, Computational homogenization of thin structures using a 7-parameter shell formulation with applications in continuum nanomechanics, 12th US National Congress in Computational Mechanics (USNCCM12), Raleigh, USA, July 22-25, 2013.

[C65] (Invited lecture) J. Yvonnet, T.T. Nguyen, V. Monchiet, Q.-Z. Zhu, A fast method for solving microstructures problems with arbitrary contrasts defined on large grids of voxels without Fourier transform, ECCOMAS Coupled Problems in Sciences and Engineering (COUPLED 2013), Ibiza, Spain, June 17-19, 2013.

[C64] A. B. Tran, J. Yvonnet, Q. C. He, C. Toulemonde, J. Sanahuja, A four scales creep analysis of a building containment of nuclear reactor, International Conference on advances in Computational Mechanics (ACOME), Ho Chi Minh City, Vietnam, August 14-16, 2012.

[C63][INV11] (Invited lecture) J. Yvonnet, Q.-Z. Zhu V. Monchiet, A Lippmann-Schwinger method without Fourier transform to solve thermomechanical problems over voxels grids, ECCOMAS 2012, Vienna, Austria, September 10-14, 2012.

[C62][INV10] (Invited lecture) J. Yvonnet, Q.-C. He, Q.-Z. Zhu, E. Monteiro, H. Le Quang, J.-F. Shao, S.-T. Gu, A XFEM framework for modeling heterogeneous media with interfacial energy and size-dependent properties, 10th World Congress on Computational Mechanics (WCCM 2012), São Paulo, Brazil, July 8-13, 2012.

[C61] A.B. Tran, J. Yvonnet, Q.-C. He, C. Toulemonde, J. Sanahua, Computational homogenization of heterogeneous, linear viscoelastic materials: a new simple and efficient method without Laplace transform neither multilevel computations, 10th World Congress on Computational Mechanics (WCCM 2012), São Paulo, Brazil, July 8-13, 2012.

[C60] (Invited lecture) J. Yvonnet, M. Tuan Hoang, A. Mirtushchenkov, G. Chambaud, Multiscale modeling of piezoelectric nanowires, Fifth US-France symposia of the International Center for Applied Computational Mechanics (ICACM 2012), New-York, USA, June 11-13, 2012.

[C 59] Q-C. He, J. Yvonnet, S.-T. Gu, Interfacial discontinuity relations and imperfect interface models, Euromech colloquium 514 "New trends in contact mechanics", Cargeses, Corsica, France, March 27-31, 2012.

[C 58] A. Clément, C. Soize, J. Yvonnet, Computational nonlinear stochastic homogenization of hyperelastic heterogeneous materials in high dimensions, Euromech colloquium 537 "Multiscale Computational Homogenization of Heterogeneous structures and materials", Marne-la-Vallée, France, March 26-28, 2012.

[C 57] Q.-Z. Zhu, J. Yvonnet, Q.-C. He, Computational Homogenization of composites with imperfect interfaces and size-dependent properties: an XFEM/level-set approach, Euromech colloquium 537 "Multiscale Computational Homogenization of Heterogeneous structures and materials", Marne-la-Vallée, France, March 26-28, 2012.

[C 56] S. Nezamabadi, H. Zahrouni, J. Yvonnet, M. Potier-Ferry, Computational homogenization of materials with local and global instabilities, Euromech colloquium 537 "Multiscale Computational Homogenization of Heterogeneous structures and materials", Marne-la-Vallée, France, March 26-28, 2012.

[C55] A. Clément, C. Soize, J. Yvonnet, Computational nonlinear stochastic homogenization using a non-concurrent multiscale approach for hyperelastic heterogeneous microstructures analysis, SIAM Conference on Uncertainty Quantification, Raleigh North Carolina, USA, April 2-4, 2012.

[C54] J. Yvonnet, A fast method without Fourier transform for simulation of local and effective thermo mechanical fields in complex 3D microstructures, 3D Microstructure Meeting, Saarbrücken, Germany, November 2-4, 2011.

[C53] (Invited lecture) J. Yvonnet, Alexander Mitrushchenkov, Qi-Chang He, Gilberte Chambaud, A multiscale procedure combining finite elements and ab initio calculations to model size-dependent mechanical properties of nanowires, 2nd International conference on Material Modeling (ICMM2), August 31st - September 2nd 2011, Paris

[C52] Y. Cong, J. Yvonnet, H. Zahrouni, Etude des instabilités à l'échelle atomique du graphène par la méthode asymptotique numérique. 20e congrès Français de Mécanique (CFM), Besançon, 29 août-2 septembre 2011.

[C51] J. Yvonnet, An iterative scheme operating in the real space domain for solving complex microstructural problems defined by micro tomography images, Trends and Challenges in Computational Mechanics (TCCM), 12-14 September 2011, Padua, Italy.

[C50] G. Bonnet, T.K. Nguyen, V. Monchiet, J. Yvonnet, A numerical method coupling FFT and NEXP methods for computing the overall response of nonlinear composites, International Conference on Composites Structures (ICCS16) 28-30 June 2011, Porto, Portugal.

[C49] G. Bonnet, T.K. Nguyen, V. Monchiet, J. Yvonnet, A numerical method coupling FFT and NEXP methods for computing the overall resonse of nonlinear composites, 20e congrès Français de Mécanique (CFM), Besançon, 29 août-2 septembre 2011.

[C 48]Q.-Z. Zhu, J.F. Shao, J. Yvonnet, Q.-C. He, Modelling of imperfect interfaces effects via XFEM with developments of enrichment functions, XFEM 2011, 29 June - 1st July 2011, Cardiff, United Kingdom.

[C47] Y. Cong, J. Yvonnet, H. Zahrouni, Atomistic simulation of instabilities for atomistic-scale lattice structures by application of the numerical asymptotic Method, Sixth MIT conference on Computational Fluid and Solid Mechanics, June 15-17, 2011, Cambridge, 2011.

[C46] J. Yvonnet, A. Mitrushchenkov, Q.-C. He, G. Chambaud, A multiscale procedure combining finite element and ab initio calculations to model size-dependent mechanical properties of nanowires, Sixth MIT conference on Computational Fluid and Solid Mechanics, June 15-17, 2011, Cambridge, 2011.

[C45] A. Clement, C. Soize, J. Yvonnet, A stochastic multiscale approach to deal with the homogenization of random nonlinear heterogeneous materials defined in high dimensional parameters space, Sixth MIT conference on Computational Fluid and Solid Mechanics, June 15-17, 2011, Cambridge, 2011.

[C44] A.B. Tran, J. Yvonnet, Q.-C. He, J. Sanahuja, C. Toulemonde, A simple computational homogenization method for structures made of heterogeneous viscoelastic materials, Sixth MIT conference on Computational Fluid and Solid Mechanics, June 15-17, 2011, Cambridge, 2011.

[C43] S. Nezamabadi, H. Zahroun, J. Yvonnet, Matériaux hyperélastique et Méthodes symptotique Numérique, 10e Colloque National en Calcul des Structures, 9-13 Mai 2011, Presqu'île de Giens

[C42] A. B. Tran,J. Yvonnet, Q-C. He, C. Toulemonde, J. Sanahuja, Calcul multi échelle des structures hétérogènes viscoélastiques linéaires: une approche simplifiée, 10e Colloque National en Calcul des Structures 9-13 Mai 2011, Presqu'île de Giens

[C41] J. Yvonnet, A. Mitrushchenkov, G. Chambaud, Q.-C. He, A multiscale method for modeling size and surface effects in crystalline nanowires based on finite element and quantum mechanics, 10e Colloque National en Calcul des Structures 9-13 Mai 2011, Presqu'île de Giens

[C40] Yvonnet J., He Q. C. A non-concurrent multiscale computational method for homogenization of hyperelastic material, 16th US National Congress of Theoretical and Applied Mechanics, June 27-July 2, 2010, State College, USA.

[C39] (Invited lecture) Yvonnet J., Mitrushchenkov S., Chambaud G. A computational method for modelling size and surface effects in crystalline nanowires based on Finite Elements and Quantum mechanics, 16th US National Congress of Theoretical and Applied Mechanics, June 27-July 2, 2010, State College, USA.

[C38] Yvonnet J., Mitrushchenkov S., Chambaud G, Constructing continuum models of ionic nanowires from quantum mechanics computations, IV European Conference on Computational Mechanics, Paris, France, May 16-21, 2010

[C37] (Keynote lecture), Yvonnet J. Non-concurrent multiscale methods: a new trend for computational homogenization of nonlinear materials, 2nd International Workshops on Advances in Computational Mechanics, March 29-31, 2010, Yokohama, Japan.

[C36] Tran A-B., Yvonnet J., He Q-C., Toulemonde C., Sanahuja J., A multiple level-set approach to prevent artificial percolation in complex microstructures with nearby inclusions within X-FEM, International Conference on Extended Finite Element Methods - XFEM 2009, September 28–30, 2009, Aachen, Germany.

[C 35] Monteiro E., Yvonnet J., He Q.-C., Modeling imperfect interfaces at finite strains using X-FEM, International Conference on Extended Finite Element Methods - XFEM 2009, September 28–30, 2009, Aachen, Germany.

[C34] Monteiro E., Yvonnet J., He Q.-C., Analytical and numerical solutions for finite elastic deformation problems involving imperfect interfaces, 1st International Conference on Material Modelling, September 15-17, 2009, Dortmund, Germany.

[C33] Nezamabadi S., Zahrouni H., Yvonnet J. and Potier-Ferry M., Multiscale microbuckling analysis of elastoplastic long fiber composites, 7th European Solid Mechanics Conference (ESMC 2009), 7-11 September, 2009, Lisbon, Portugal.

[C32] Nezamabadi S., Zahrouni H., Yvonnet J. et Potier-Ferry M., Technique multi-échelle pour l'analyse du microflambage des composites, XIXème Congrès Français de Mécanique (CFM 2009), 24-28 Août, 2009, Marseille, France.

[C31] Yvonnet J., He Q.-C., Homogénéisation non-linéaire des structures : une nouvelle méthode numérique avec calculs découplés entre échelles, 19ème Congrès Français de Mécanique (CFM) Marseille, 24-28 août 2009, France

[C30] (Invited lecture) Yvonnet J., He Q.-C., Numerical homogenization of nonlinear media at finite strains using numerically explicit potentials, 10th US National Congress on Computational Mechanics (UNSCCM), 16-19 July, 2009, Columbus, USA.

[C29] (Invited lecture) Yvonnet J., Gonzalez D., He Q.-C, A method using numerically explicit potentials for the homogenization of arbitrarily nonlinear anisotropic composites, ECCOMAS Thematic conference: Computational Methods for Coupled Problems in Science and Engineering (COUPLED), 8-10 June 2009, Ischia Island, Italy.

[C28] Yvonnet J., Gonzalez D., He Q.-C., Une méthode de potentiels numériques explicites pour le calcul multi échelles des composites non linéaires, 9e colloque en calcul des structures, 25-29 mai, 2009, Giens, France

[C27] Nezamabadi S., Yvonnet J., Zahrouni H. et Potier-Ferry M., Analyse multi-échelles du flambage des matériaux hétérogènes, 9e Colloque National en Calcul des Structures, 25-29 Mai, 2009, Giens, France.

[C26] Yvonnet J., Toulemonde C., He Q-C, An extended Finite Element Method For Modelling Micro and Nano Inclusions with Imperfect Interfaces, 8th.World Congress on Computational Mechanics (WCCM8), June 30 –July 5, 2008, Venice, Italy.

[C25] Nezamabadi S., Zahrouni H., Potier-Ferry M., Yvonnet J., Multiscale Buckling Analysis of Heterogeneous Materials, 8th.World Congress on Computational Mechanics (WCCM8), June 30 –July 5, 2008, Venice, Italy.

[C24] Yvonnet J., Monteiro E, Le Quang H., He Q.-C., Thermo-mechanical numerical modelling of nano-inclusions with arbitrary shapes, IUTAM Symposium on Modelling Nanomaterials and Nanosystems, Aalborg, Denmark, May, 19-22, 2008.

[C23] Yvonnet J., Le-Quang H., Toulemonde C., He Q.-C., Thermo-mechanical modelling of materials containing micro/nano inclusions with imperfect interfaces, 11th ESAFORM Conference on Material Forming, Lyon, France, April, 23-25, 2008.

[C22] Cosson B., Chevalier L., Yvonnet J., Optimization by the C-NEM Method of the StretchBlow Molding Process of a PET Bottle Near Tg, ESAFORM 2008, Lyon, France.

[C21] (Invited lecture) Yvonnet J., He Q.-C., Monteiro E. On the use of model reduction for computational homogenization of non-linear micro and nano composites, Computational Modeling

and Experiments of the Composites Materials with Micro and Nano Structures – CMNS 2007, Liptovský Mikuláš, Slovakia, may, 28-31, 2007.

[C20] Yvonnet J., He Q.-C., Zahrouni H., Potier-Ferry M., Nouvelles approches basées sur la réduction de modèle pour le calcul multi-échelles des matériaux hyperélastiques en grandes déformations. XVIIIe Congrès Français de Mécanique, Grenoble, France, septembre, 2007.

[C19] Cosson B., Chevalier L., Yvonnet J, Identification viscoélastique, en grande transformation, du comportement du polyéthylène téréphtalate au-dessus de Tg et simulation du soufflage libre d'une bouteille, XVIIIe Congrès Français de Mécanique, Grenoble, France, septembre, 2007.

[C18] Illoul L., Lorong P., Yvonnet J., Chinesta F., L'approche C-NEM : une alternative aux éléments finis pour l'étude des procédés, 8e colloque national en calcul des structures, Giens, France, 2007.

[C17] (Invited lecture) Yvonnet J., He Q.-C., Zahrouni H., Potier-Ferry M. The reduced model multiscale method for the nonlinear homogenization of hyperelastic media, IInd ECCOMAS international conference on Computational Methods for coupled problems in Science and Engineering – COUPLED PROBLEMS 2007, Ibiza, Spain, may, 21-23, 2007.

[C16] Cosson B., Chevalier L., Yvonnet J., Numerical Simulation of Multi-Axial Tensile Tests and Free Blowing of a PET Bottle Near Tg by the C-NEM, 10th Esaform conference on material forming, Zaragoza, Spain, April, 18-20, 2007.

[C15] Lemarchand F., Yvonnet J., Chinesta F., Boust F., Beauchene P., Multiscale thermomechanical simulation in composite forming processes, 7th World Congress on Computational Mechanics, Los Angeles, USA, july 16-22 2006.

[C14] Alfaro I., Yvonnet J., Chinesta F., Cueto E., Doblaré M., An analysis of the performance of several natural-neighbour-based Galerkin methods, 9th ESAFORM Conference on Material Forming, Glasgow, UK, April, 26-28, 2006.

[C13] Yvonnet J., Villon P., Chinesta F., Natural Element Bubbles for treating incompressible media, Third International Workshop on Meshfree methods for partial differential equations, Bonn, Germany, September, 12-15, 2005.

[C12] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., Analyse du procédé de découpe par cisaillage adiabatique par la méthode des éléments naturels. XVIIe Congrès Français de Mécanique Troyes, septembre 2005.

[C11] Yvonnet J., Alfaro I., Cueto E., Chinesta F., Dobalré M., Nouvelles avancées dans les méthodes sans maillage pour la simulation numérique des procédés de mise en forme . 7e colloque national en calcul des structures, Giens, 2005.

[C10] Yvonnet J., Chinesta F., A hybrid moving least squares and natural element method for direct enforcement of boundary conditions and fast three dimensional computations, Third MIT conference on computational Fluid and Solid Mechanics, Cambridge, USA, June, 14-17, 2005.

[C9] Yvonnet J., Chinesta F., Villon P., Breitkopf P., Rassineux A., A Hermite natural element formulation, ECCOMAS Thematic Conference on Meshfree Methods, Lisbon, Portugal, July 11-14, 2005.

[C8] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., Metal forming simulations using recent advances in the natural element method, 8th ESAFORM Conference on Material Forming, Cluj-Napoca, Romania, avril, 27-29 2005.

[C7] Breitkopf P., Chinesta F., Villon P., Racineux A., Yvonnet J., A mixed Natural Neighbour and Diffuse Element framework for meshfree methods development., Sixth World Congress on Computational Mechanics, Beijing, China, September, 5-10, 2004,.

[C6] Yvonnet J., Umbrello D., Chinesta F., Micari F., An inverse procedure to determine the heat flux on the tool in orthogonal cutting, 7th CIRP International Workshop on Modelling in Machining Operations, Cluny, France, May, 4-5, 2004.

[C5] (Keynote lecture) Yvonnet J., Lorong P., Ryckelynck D., Chinesta F. Investigations in shear band propagation using a natural neighbor meshfree approach, 7th. ESAFORM Conference on Material Forming, Trondheim, Norway, avril 2004.

[C4] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., New capabilities of the C-NEM in forming processes simulation, 7th. ESAFORM Conference on Material Forming, Trondheim, Norway, April, 28-30 2004.

[C3] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., Recent developments in the meshless natural element method for metal forming simulations, 1st International Conference on Finite Element for process, Luxembourg, novembre 2003.

[C2] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., The C-NEM for discontinuous natural neighbour Galerkin interpolation and moving interfaces, Second International Workshop on Meshfree Methods for Partial Differential Equations, Bonn, Germany, sept. 2003.

[C1] Yvonnet J., Ryckelynck D., Lorong P., Chinesta F., A new extension of the natural element method for non-convex and disconstinuous problem: The Constrained Natural Element Method (C-NEM), 6th. ESAFORM Conference on Material Forming, Salerno, Italy, avril 2003.

Popularization papers

[2] Advances in Engineering, 2019
https://advanceseng.com/fracture-models-based-phase-field-crack-propagation-heterogeneous-lattices/

[1] IACM expressions, #45, 2019
https://iacm.info/wp-content/uploads/sites/19/2019/08/Expressions_45.pdf