



François TOUTLEMONDE

Born July 1st, 1965 - Married, 2 children
General Civil Engineer, Ph.D., Res. Dir.

University Gustave Eiffel,
Head of Materials and Structures (MAST) Department
Tel : +33 1 81 66 83 97
e-mail : francois.toutlemonde@univ-eiffel.fr
Bienvenue Building - Cité Descartes - 14-20 Boulevard Newton
77447 Marne la Vallée Cedex 2 - FRANCE

Education and Titles:

Civil Engineer: Ecole Polytechnique (X84) / Ecole Nationale des Ponts et Chaussées (1990)
Ph.D. delivered by Ecole N^{ale} des Ponts et Chaussées - Materials and Structures (1994)
Research Director Degree delivered by Université de Marne-la-Vallée (2003).

Prize of AFGC - French Association for Civil Engineering (2005)
“Trophée Freyssinet” for the development of UHPFRC (2018)

Languages: French (mother language) - Fluent professional English – German, Italian (basic level)

Professional experience:

1988-1989 : *Saint-Gobain Recherche*. Research engineer. Glass fiber-reinforced cement composites. Co-author of a patent

From 1990 : *Laboratoire Central des Ponts et Chaussées (LCPC)* then *IFSTTAR* from 2011 then *Gustave Eiffel University* from 2020.

1990-1997 : Researcher – concrete shock resistance, high performance concrete (HPC)

1998-2009 Head of the Structures Laboratory

2006-2010 Head of the Bridges Division

2010-2012 Deputy Head of the Bridges and Structures Department

2013-2017 : Chief Scientist, Materials & Structures (MAST) Department of IFSTTAR

2017-2019 : Deputy Director in charge of R&D, MAST Department of IFSTTAR

2020-2021 : Deputy Head of MAST Department, Univ. G. Eiffel

Including main experiences in project management:

1995-2000 : leader of “BTHP” work package within national R&D consortium “BHP 2000”

2010-2016 : scientific coordinator of the R&D project Badifops (about 1M€)

Scientific Activity :

Supervision of 15 PhD theses and 7 post-doc projects, execution and management of research projects in the following fields :

- Concrete resistance at high strain rate, application to shock resistance of waste containers and rock-sheds
- Serviceability of special composite structures (prebent steel-high performance concrete beams or FRC-timber beams connected to a concrete deck)
- Structural effects of internal concrete expansive reactions (alkali-aggregate reactions, delayed ettringite formation) : experimental analysis and modelling, application to preventive measures and management of affected structures
- Structural application of advanced concrete: (very) high performance concrete, fibre-reinforced concrete, ultra-high performance fibre-reinforced concrete (UHPC)

About 15 expert studies and investigations in the field of concrete structures engineering (especially application of advanced concretes), including :

TOUTLEMONDE F., TORRENTI J.-M., GODART B., MARTIN R.-P., SEIGNOL J.-F., DIVET L. (2015) *Assessment of Structures subject to Concrete Pathologies*, Contribution to the OCDE report “Assessment of Nuclear Structures Subject to Concrete Pathologies », 19 pages.

TORRENTI J.-M., TOUTLEMONDE F. (2014) *Méthodologie de calcul des ouvertures de fissures des pièces massives*, recommendation of a design methodology for Vinci Construction Grands Projets, 10 pages.

TOUTLEMONDE F. (2016) Expert review of the report « *Evaluating the potential of Ultra-high performance concrete for the fabrication of marine structures* ».

TOUTLEMONDE F., participation to committees for approval of innovative techniques : 2016, UHPFRC façade elements for the high-rise building La Marseillaise – 2017, UHPFRC roofing elements of Montpellier Sud de France high speed railway station.

TOUTLEMONDE F., TORRENTI J.-M. (2018) *Note sur l'utilisation de BFUP et sa durabilité dans le projet de couverture « Méga-tuiles » du CSM*, technical assessment for ANDRA (nuclear waste management Agency).

BOUTEILLE S., TOUTLEMONDE F. (2020) Expert advice on the use of fiber-reinforced concrete in tunnel lining segments of the Grand Paris Express infrastructure, 26 pages.

Participation to committees for delivering PhD Theses and Research Director degrees, to Scientific Assessment committees, scientific paper reviews, scientific committee of international conferences

75 scientific papers published in peer-reviewed journals, including :

- SERCOMBE J., ULM F.-J., TOUTLEMONDE F. (1998) Viscous hardening plasticity for concrete under high rate dynamic loading, *Journal of Engineering Mechanics*, ASCE, vol. **124** n° 9, 1050-1057.
- MULTON S., TOUTLEMONDE F. (2006) Effect of applied stresses on alkali-silica reaction-induced expansions, *Cem. Conc. Res.*, vol. **36**, 912-920.
- SORELLI L., CONSTANTINIDES G., ULM F.-J., TOUTLEMONDE F. (2008) The nano-mechanical signature of Ultra High Performance Concrete by statistical nanoindentation techniques, *Cem. Conc. Res.*, vol. **38**, 1447-1456.
- MULTON S., TOUTLEMONDE F. (2010) Effect of moisture conditions and transfers on alkali silica reaction damaged structures, *Cem. Conc. Res.*, vol. **40**, 924-934.
- BABY F., GRAYBEAL B., MARCHAND P., TOUTLEMONDE F. (2013) UHPFRC tensile behavior characterization: inverse analysis of four-point bending test results, *Mat. and Struct.*, vol. 46 (8), 1337-1354.
- MARCHAND P., BABY F., KHADOUR A., BATESTI T., RIVILLON P., QUIERTANT M., NGUYEN H.H., GENEREUX G., DEVEAUD J.-P., SIMON A., TOUTLEMONDE F. (2016) Bond behaviour of reinforcing bars in UHPFRC: Experimental investigation, *Mat. Struct.*, 49:1979-1995.
- ZHOU X.-Y., SCHMIDT F., TOUTLEMONDE F., JACOB B. (2016) A Mixture Peaks over Threshold Approach for Predicting Extreme Bridge Traffic Load Effects, *Probabilistic Engineering Mechanics*, 43, 121-131.
- KAWABATA Y., SEIGNOL J.-F., MARTIN R.-P., TOUTLEMONDE F. (2017) Macroscopic chemo-mechanical modeling of alkali-silica reaction of concrete under stresses, *Conc. and Building Mat.*, vol. 137, 234-245.

Co-author of 6 books / technical guides or recommendations

Chair of technical conferences of ACI Paris Chapter (one per year since 2009, 80 to 150 attendees)

Chair or co-chair of international conferences :

- Architecture and Concrete (ACI Centennial, Paris 2004, 30 contributions, 70 attendees)
- CONSEC'07 « Concrete under Severe Conditions: Environment and Loading » (Tours 2007, 205 papers, 320 attendees)
- UHPFRC'09 « designing and building with UHPFRC » (Marseille 2009, 54 papers, 340 attendees)
- ConCrack3, JCI-RILEM international workshop (Paris 2012, 27 contributions, 100 participants)
- UHPFRC'2013 « designing and building with UHPFRC » (Marseille 2013 - 81 papers, 360 attendees)
- ConCrack5, JCI-RILEM international workshop (Tokyo 2017, 20 contributions, 100 participants)
- UHPFRC'2017, AFGC-fib-ACI-RILEM international symposium (Montpellier 2017, 106 papers, 400 participants)

Affiliations (academic societies, standardization and experts committees...)

President of Paris Chapter of the American Concrete Institute (since 2006)

Member of the Experts Group for Nuclear Reactors Safety since 2000.

Member of French Standardization Committees on concrete AFNOR P18B (chair), P18C (chair), P18E (member) since 2013 and on concrete structures BNTRA CN EC2 (since 2001), French delegate to CEN TC104/SC1/WG1 and CEN TC250/SC2/WG1/TG10 committees (since 2015).

Invited professor at Hiroshima University (2011, 2014 and 2016)