

# 3D CONCRETE PRINTING: FUTURE OF EMERGING INDUSTRY TRENDS, CHALLENGES, ECONOMIC POTENTIALS, AND OPPORTUNITIES

**MONDAY, NOVEMBER 18, 2019**  
**IB-302 11:30-12:30AM**



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3D printing methods using polymeric materials developed since the 90's, this additive manufacturing is on rise nowadays. As formworks represent 35 to 60 % of the global cost of a concrete construction, this innovation embodies an important financial benefit, in addition to improving the construction rate and architectural liberties. The pioneers of this novelty have developed the "Contour Crafting" method aiming to construct buildings and houses on Earth and they are even envisaging applying this new technique on the moon. 3D concrete printing is a technologically advanced and innovative method used for constructing predesigned building components with the help of 3D concrete printers. The technology holds the promise of substantially optimising the construction industry in terms of construction cost, time, error reduction, flexibility in design, and environmental impact. The field of 3D concrete printing is receiving increased focus from construction companies across the globe. These companies mainly focus on experimenting with different concrete mixes and printing machines to bring about further developments in this construction technique. With construction companies making continuous efforts to bring 3D concrete printing in mainstream construction, the global 3D concrete printing market is projected to gather significant momentum in the next few years. Global 3D concrete printing market is projected to grow from \$ 30 million in 2018 to \$ 58 million by 2024.

The rate at which construction companies, researchers, and technologists are coming together in the development of 3D concrete printing techniques is commendable. The market is expected to receive a healthy boost from developing regions such as Asia, Asia Pacific and some parts of Latin America in the near future. The construction sector in these regions is projected to lead to an increased demand for cost-effective building elements fabricated through 3D concrete printing techniques to complement the several new infrastructure development and building construction projects. The fresh and rheological properties of 3D printing of concrete are presented.



## Dr Mohammed Sonebi

Dr **Mohammed Sonebi** has been thoroughly enjoying this academic career though, having authored/co-authored more than **220 peer-review journal and conference papers** and **26 books/chapters with high citations (2701, h-index:28)**. He trained several **PhDs, Postdoc, Research Fellow, Industrial researchers, and Master students**.

He is a **Fellow RILEM, RILEM Regional Convenor of Middle East and North Africa** (International Union of Laboratories and Experts in Construction Materials, Systems and Structures), **Chair of RILEM TC-266-Meseartment of Rheolgical Properties of cement-based materials, Member of RILEM Development Advisory Committee (DAC), RILEM Convener for North Africa and Middle East**, member of several **RILEM committees TCs (145, 197, 205, 209, 222, 228, 233, 236, 266, 275, 276-Ditigal Fabrication of concrete)**, **Vice-Chair of American Concrete institute (ACI) 552-Cemetititious Grouting**, Voting member and member of several committees of **American Concrete Institute (ACI, 236, 237, 238, 241, 552, 564-3D Printing with Cementitious Materials)**, and member of **ASTM International- C09-47-Self-Consolidating Concrete, ISHMII (International Society for Structural Health Monitoring of Intelligent Infrastructure)** and **fib (federation international du béton)**.

He delivered a several **Plenary Keynotes** (Europe, North and South America, Asia and Africa). He was also sit on **several organising, Technical and Scientific Committees of International Conferences**.

He was **awarded the Palmer Prize with ICE** for the Best Paper in **Structures and Building Journal (2017)**. He is the **Chair of Editorial Panel of ICE Construction Materials Journal**.

He was also awarded with Bullivant Taranto for the **Best KTP Partnership and Excellence Engineering Awards 2013 (UK)**, a **Finalist for Parliamentary Awards 2016** in category **Innovation Leading to New Markets** at Westminster.

In **2002**, Dr M. Sonebi awarded a certificate by the **Commission of the European Union** for **Brite-Euram project on Self-Compacting Concrete** as one of ten finalist projects considered for the **Descartes Prize 2002**.

He chaired **three International Conferences Bio-Based Building Materials in 2015, 2017 and 2019.**

He was a **recipient of several fundings** from the **European Union (EU), EPSRC (UK), Innovate (UK), KTP, the British Council, the Royal Society, industrial consultants, and Fonds du Quebec (Canada).**

He established strong research links with **Universities across the world:** USA, Canada, Mexico, Brazil, The Netherland, Belgium, Germany, France, Italy, Ireland, Iceland, Sweden, Norwegian, Denmark, Spain, Portugal, Switzerland, Slovenia, Czech Republic, China, Australia, India, Turkey, UAE, Ukraine, New Zealand, Malaysia, South Africa, North Africa.

Actually, he is a **Visiting Professor** at **Ryerson University (Canada) 2019-2022.** He was also **invited a Professor** at **University Sherbrooke (Canada)** in 2010, **Cergy-Pointoise (Paris)** – 2012 &2019, **University d'Artois, Buthune, France** (2010).