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Ferrocement and Thin Reinforced Cement Composites: from Lambot to Nervi to the present

by

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University of Michigan

Date: Thursday, 24 February 2022
Time: 3:00 pm to 4:30 pm
(Pending PDU)

On-site	Virtual
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Due to COVID-19 safety measures, onsite lecture is restricted to the first 40 participants. Only fully vaccinated can register for onsite event. You will receive an email confirmation 3 days before the lecture date. **Venue:** **National University of Singapore** **1 Engineering Drive 2** **Singapore 117576** **EA Auditorium**	**You will receive an email confirmation with the zoom link upon registration**

Seats are limited. Please register early. All are welcome and admission is free

Abstract

Ferrocement, patented by Lambot in1855, is truly the first invention of reinforced concrete. This presentation focuses on the evolution over time of ferrocement and thin reinforced cement composites, defined here as having less than about 50 mm in thickness. It identifies two main time periods, one dormant period about a century long, and a subsequent slow revival period, initiated by Nervi in Italy, that has lasted to date. While conventional reinforcements for ferrocement remain mostly steel wire meshes or metal lath, new forms of reinforcements, designed to improve performance, expand applications and minimize total cost, are described. They include: 1) fiber reinforced polymeric (FRP) reinforcements (or textiles or fabrics) which use high performance fibers such as carbon, Kevlar, Spectra and the like; 2) new steel unidirectional reinforcing mats made with extremely high strengths wires or strands; 3) 3D textiles or fabrics using polymeric fibers; 4) 3D textiles using combination of polymeric fibers and steel; and 5) shape-memory reinforcement materials to induce self-stressing. Over the same period, the cement matrix has evolved immensely in both its hardened and fresh states, leading to new qualifications such as high strength, high performance, ultra-high performance (UHPC), self-consolidating, self-levelling, etc. Adding micro-fibers to the cement matrix of ferrocement adds another dimension to the resulting composite as well as potential for improved performance. However, in spite of these amazing achievements, the most basic tool to serve the branch of society that could benefit most from ferrocement, has been neglected.

Speaker's Biography

Antoine E. Naaman is Professor Emeritus at the University of Michigan, Ann Arbor, USA. He holds a Diploma Engineer from ECP in Paris, France, and MS and Ph.D. degrees in Civil Engineering from the Massachusetts Institute of Technology, Cambridge, USA. Dr. Naaman's research studies have led to more than 350 publications in technical journals and symposia proceedings for which he received numerous awards. He is the author of three textbooks and four chapters in handbooks, and editor or co-editor of fourteen Symposia books. His textbook on Ferrocement has been a classic in the industry. He is a *Fellow* and *Honorary Member* of the American Concrete Institute (ACI), *Fellow* of the American Society of Civil Engineers (ASCE), *Fellow* of the Precast / Prestressed Concrete Institute (PCI), and *Fellow*, founding member and past president of the International Ferrocement Society (IFS).

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