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Geopolymers: Green Concrete for Sustainable Infrastructures



Faris Matalkah Ph.D. in Civil Engineering

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Campus Fuentenueva

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Considering the increasing use of construction materials in the past century, the necessity of using more sustainable, lower cost, and high-performance binders have been increasing, to meet the mechanical and durability properties of construction materials as well as the environmental requirements of the construction industry. Geopolymers are proposed as innovative, eco-friendly construction materials. Geopolymer resin was first described in the 1970s as inorganic aluminosilicate polymers that form solid ceramic-like materials at near ambient temperatures. Geopolymers are produced using a two-part mix, consisting of aluminosilicate materials and alkaline solutions (as activators). The raw materials for the aluminosilicate can be a by-product such as natural volcanic tuff/clay or industrial by-product such as slag and coal fly ash. Geopolymeric-based binder offers distinct advantages over ordinary Portland cement-based binder in terms of performance, environmental impact, and energy saving.

Faris Matakah



Faris Matakah is an Associate Professor of Civil Engineering and the head of the Quality Assurance Department Yarmouk University. Dr. Matakah received his Ph.D. in Civil Engineering from Michigan State University (United States), MSc, and BSc in Civil Engineering from Jordan University of Science and Technology (Jordan).

He is the founder of the first American Concrete Institute (ACI) Student Chapter in Jordan at Yarmouk University in 2019. Dr. Matakah's research interests include the development of sustainable, energy-efficient, and low-cost cementitious materials. He has published more than 45 peer-reviewed articles in high-ranked journals in the field of cement and concrete, geopolymers, and ultra-high-performance concrete.

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