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Jamia Millia Islamia

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Press Release

JMI researchers' invention 'Environment Friendly Geopolymer Concrete' gets German patent

It is a matter of pride for the Jamia Millia Islamia (JMI) that an environment friendly concrete invented by Dr. Ibadur Rahman, Assistant Professor, Department of Civil Engineering, JMI along with other researchers from the university has been granted a patent as an intellectual property by the Patent Office, Federal Republic of Germany.

The main objective of the invention titled 'Composition of a Geopolymer Concrete mixture' by Dr. Rahman and his co-inventors from JMI, Prof. Asif Husain and research scholar Er. Sagar Paruthi is to reduce carbon emissions by eliminating the usage of cement completely in the production of concrete.

Dr. Rahman stated, "It is imperative for the construction and related industries to undergo a green revolution; in other words, they must embrace and implement eco-friendly materials."

This invention examines the impact of entirely replacing cement with industrial waste, such as fly ash and ground granulated blast furnace slag, along with incorporating two additives, nano silica and silica fume, on the mechanical and durability properties of geopolymer concrete mixes. "The combination of nano silica and silica fumes enhances the mechanical properties, durability, and microstructure of the concrete. The modified concrete exhibits improved morphological properties due to the pore filling, resulting in a denser and more compact structure", said the inventors.

Dr. Rahman has been working in the field of nano based modified cement and concrete composite for the last ten years during his PhD research. Dr. Rahman now has 5 patents (2 Australian Patent, 1 South African Patent, 1 Indian Patent, 1 German Patent) to his credit.

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Dr. Ibadur Rahman



Prof. Asif Husain



Er. Sagar Paruthi