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Synthesis and Characterization of TiO₂ Nanoparticles and its Use as Concrete Additives

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Abstract

The term 'Nanotechnology' means the creation of materials and devices by controlling the size of the matter at the levels nanometer, usually 1-100nm. It has been found from the recent study that nanotechnology play an important role in the area of concrete. It is well known that the concrete is most commonly used and widely accepted construction materials. The properties of concrete have been studied at macro or structural level without fully understanding the properties of the cementitious materials at the micro or nano - scale level. The rapid development in the area of science and technology makes it possible to characterize cementitious materials at nano - regime. The better understanding of the structure and behavior of concrete at nano-regime will help to improve concrete properties and make concrete more durable. In this direction, the TiO₂ nanoparticles has been synthesized and it effect on concrete properties such as strength, durability, porosity, capillary pore sizes in cement paste, diffusion of pore solution and aggressive chemicals hindrance has been investigated by the introduction of TiO₂ nanoparticles as an additive in concrete.

Keywords: Nanoparticles, TiO₂, Comment, Concrete.