State of The Art Techniques for Increasing the Quality of Concrete Made With Recycled Aggregate

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Abstract: The concrete made with recycled aggregate (RA) differs from normal concrete which made with natural aggregate (NA). RA surfaces are typically surrounded by hardened residual/adhered mortar, which can result in high porosity and a high capacity for water absorption (WA), both of which have a negative impact on mechanical properties and durability of concrete made with RA. Two major approaches can be adopted for improving RA quality, the first approach is removing the residual/attached mortar from RA and the second approach is strengthening of the RA. This study reviews major publications that describe the methods, techniques used worldwide such as carbonation, self-healing, coating, reactive nanoparticle materials, and adding mineral admixtures to the RA to overcome the problems associated with RA in producing concrete and to achieve acceptable quality of recycled concrete aggregate (RCA) compared to that made with NA. It also tackles the benefits, and limitations of the used techniques. The study's main finding indicates that carbonation conduction is the most efficient and practical technique to improve the mechanical properties and durability of concrete made with RA. Moreover, researchers mentioned that carbonation curing has a positive impact on RCA and that its WA reduced by about 30%, apparent density (AD) increased by about 5%, and aggregate crushing value (ACV) dropped by about 10%, compared with uncarbonated RCA.

Green synthesis of Copper Oxide nanoparticles from Rudraksha extract for photocatalytic degradation of Methylene Blue under sunlight

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Abstract: Copper oxide nanoparticles (NPs) with an average particle size of 20 nm, were synthesized from Rudraksha extract through a simple green method. The photocatalytic property samples were studied in the degradation