

Keynote Paper

## **Cement-based adsorbent and bio-concrete: Experiments and simulations**

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### **ABSTRACT**

Modern-day cement and its derivative materials (i.e., concrete) require physicochemical properties besides the mechanical strength demanded for structural and construction purposes. These properties enable cementitious materials to possess unique characteristics, which can broaden their use in a variety of application fields. The present study introduces some of cement-based adsorbents and bio-concrete that are developed to facilitate self-healing in structural concrete, and immobilization and adsorption of hazardous ions to enhance the durability and lifespan of civil and ocean structures. Experimental and simulation studies of developing cementitious adsorbents and bio-concrete and assessing their performance are presented.

**Keywords:** *Cementitious materials, Bio-concrete, Multifunctional cementitious composite*

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