ADVANCES IN STRUCTURAL ENGINEERING AND EMERGING RESEARCH DIRECTIONS

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ABSTRACT

This keynote lecture presents, in general, current advances in structural engineering and outlines the future research directions in structural engineering and related fields. Specifically, it addresses recent development in strengthening and retrofitting of structures using Fiber-Reinforced Polymer (FRP) composites. It presents a review on historic and recent developments of the use of FRP and highlights some of the classic and modern experimental, numerical, and analytical studies associated with the use of FRPs in strengthening and retrofitting of Reinforced Concrete (RC) and steel structures. In addition, the keynote lecture highlights the performance of FRPs, including carbon, glass and basalt fibers and their hybrid combinations, as well as their epoxy as bonding agents all under normal and harsh environment such as elevated temperature and humid-saline environment. Furthermore, it provides a collective perspective on a number of limitations, challenges and research needs associated with sustainable and durable implementation of FRPs as successful externally-bonded strengthening and retrofitting materials.

Keywords: *research, FRP, strengthening, durability, temperature, environment, reinforcement concrete.*