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# Polymeric Composites in Road and Bridge Engineering: Characterization, Production and Application

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Roads, bridges, airports, and ports are multirole transportation infrastructure assets, which rely heavily on asphalt, cement, and aggregates in traditional civil engineering. Multirole transportation infrastructures should be resistant enough against structural loads and vehicle loads. Further, multirole transportation infrastructures are greatly affected by climate change, which has the potential to impact both long- and short-term infrastructure performance. Recent developments in materials science, especially polymers, have brought new perspectives in the modification of civil engineering materials and consequent improvements. Being both strong and lightweight, polymer composites have already found wide-ranging uses in civil engineering. The application of various types of polymers includes admixtures and additives (e.g., alternative binders, polymer fibers) for enhanced mechanical performances and enhanced functional properties such as self-healing and self-cleaning. Therefore, it is necessary to analyze advanced functional polymer composites sitting at the intersection of physics, chemistry, materials science, and engineering. It is concerned with the possible applications of polymeric composites to develop new technologies in road and bridge engineering, which will focus on current and future research toward characterization techniques, evaluation tools, and the production of advanced functional polymer composites.

