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# Sustainable eSiC Reinforced Composite Materials – Synthetization and Characterization

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Abstract

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## Abstract

Sustainable and light weight composite materials have received extensive attention in the application of aerospace, automotive, agriculture and marine. Synthetic SiC is expensive and harmful to the human being. Therefore, the aim of this study is to develop eSiC reinforced aluminium matrix sustainable

composite material using waste rice husk with the process route of powder metallurgy. Simple and cost-effective pyrolysis process was used for the extraction of low-density eSiC from agricultural waste rice husk which contains a significant amount of silica. This silica was then converted in to environmentally friendly SiC (known as eSiC) material and used as a reinforcing agent to the lightweight composite development. From the results, these materials showed good metallurgical bonding with better mechanical properties. It is also observed that compared to metallic cast iron, this new composite material is better in terms of cost, material usage, eco-friendly (no harm to the environment and people), hence, sustainable. This concept demonstrates that this new sustainable and lightweight material can be used for aerospace, automotive and other structural applications, especially for disk brake, liner, and shaft. This eSiC can also be used as a coating material for composite coating development. 

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