Investigation of the mechanical properties of Aluminium matrix composite for marine structures
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Abstract
Mechanical properties and microstructure of aluminium matrix composite was studied for application in marine environments. Composite materials based on Al-Mg alloy matrix are used for marine structures where strength to weight ratio and corrosion resistance are key requirements. Six different samples were prepared with varying amount of SiCp reinforcement from 0% to 25% at interval of 5%. The SEM/EDX and XRF analyses of the materials have shown that the materials developed contained the required elements and the reinforcement is well distributed within the alloy matrix. Highest hardness value of 75.4 HRB was obtained on the sample with 10% SiCp compared with the Al-Mg matrix. Impact energy of 18.98 J was obtained on sample with 15%SiCp which is also better compared to 9.97J as observed on the matrix alloy. The hardness and impact energy of the produced composite materials tested were found to be better than that of the control alloy sample at room temperature in all the percentages of reinforcements used for the research.

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