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# The functionality of intermetallic phases in the reinforcement of AA6061 aluminium alloy

[N. E. Udoye;](#)

[A. O. Inegbenebor;](#)

[O. S. I. Fayomi](#)

[Author & Article Information](#)

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Aluminium alloys reinforced with agro-based waste particles are utilized in the aerospace industry and transport sectors due to their functional properties. In this paper, AA6061 aluminium alloy strengthened with different percentages of clay and rice

husk ash (RHA) in the range of 2 to 8 wt.% at 75 and 150  $\mu\text{m}$  were produced. SEM/EDS analyzed the impact of clay and RHA particles in AA6061 used to characterized surface morphology and the Brinell hardness and INSTRON 3369 universal testing machine to determine mechanical behaviours. XRD analysis of the prepared samples showed aluminium silicate, silicon IV oxide and aluminium oxides intermetallic phases at different peaks in the matrix alloy. The samples' results contained the intermetallic phases showed improvement in hardness, tensile strength and percentage elongation of developed material to about 31.6%, 7.5%, and 4.8% respectively. The mechanical properties revealed higher results compared with undeveloped AA6061 aluminium alloy. It can be concluded that intermetallic phases play a major part in strengthening the reinforcement of AA6061 aluminium alloy.

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