

**ANALISIS PENGARUH UKURAN *REINFORCEMENT*
CANGKANG *ANADARA GRANOSA* TERHADAP SIFAT
MEKANIK PADUAN ALUMINIUM 6061**

Septia Saharani

ABSTRAK

Penelitian ini mengkaji pengaruh variasi ukuran *reinforcement* cangkang *Anadara granosa* terhadap sifat mekanik dan karakteristik mikrostruktur paduan aluminium 6061. Serbuk cangkang diproses melalui pembersihan, kalsinasi, dan pengayakan untuk memperoleh *mesh* 50, *mesh* 80, *mesh* 100. Spesimen diproduksi menggunakan metode *sand casting* dengan fraksi massa cangkang *Anadara granosa* sebesar 15%. Evaluasi dilakukan melalui analisis SEM-EDX, uji tarik, dan uji kekerasan *Vickers*. Hasil penelitian menunjukkan bahwa cangkang *Anadara granosa* terdistribusi secara merata di dalam matriks Al6061 tanpa aglomerasi, menandakan proses fabrikasi berlangsung dengan baik. Nilai *Ultimate Tensile Strength* (UTS) cenderung meningkat seiring dengan peningkatan ukuran *mesh*. *Mesh* 100 menunjukkan nilai kekuatan tarik tertinggi sebesar 92,98 MPa. Uji kekerasan *Vickers* menunjukkan bahwa peningkatan ukuran *mesh* cangkang *Anadara granosa* terbukti meningkatkan nilai kekerasan komposit secara signifikan, yaitu dari 38,47 HV, 39,77 HV, hingga mencapai nilai tertinggi 42,79 HV pada *mesh* 100. Hasil ini menunjukkan bahwa Al6061 dengan *reinforcement* cangkang *Anadara granosa* berpotensi sebagai material alternatif yang kuat dan ramah lingkungan, sekaligus pemanfaatan limbah biomaterial secara berkelanjutan.

Kata Kunci: *Anadara Granosa*, Paduan Aluminium 6061, Komposit

***EFFECT OF ANADARA GRANOSA SHELL REINFORCEMENT
ON THE MECHANICAL PROPERTIES OF ALUMINIUM
ALLOY 6061***

Septia Saharani

ABSTRACT

This study examines the effect of variations in the size of Anadara granosa shell reinforcement on mechanical properties and microstructural characteristics of 6061 aluminium alloy. The shell powder was processed through cleaning, calcination, and sieving to obtain mesh 50, mesh 80, and mesh 100. Specimens were produced using the sand casting method with a 15% mass fraction of Anadara granosa shells powder. Evaluation was conducted using SEM-EDX, tensile tests, and Vickers hardness tests. The results showed that Anadara granosa shells were evenly distributed in Al6061 matrix without agglomeration, indicating that the fabrication process was successful. The Ultimate Tensile Strength (UTS) value tended to increase with increasing mesh size. Mesh 100 showing the highest tensile strength value of 92.98 MPa. The Vickers hardness test showed that increasing the mesh size of Anadara granosa shells significantly increases the hardness value of the composite, from 38.47 HV and 39.77 HV to a maximum value of 42.79 HV for mesh 100. These results indicate that Al6061 reinforced with Anadara granosa shells has the potential to be a durable and environmentally friendly alternative material, while also promoting the sustainable use of biomaterial waste.

Keyword: *Anadara Granosa, Aluminium Alloy 6061, Composite*