

Superficial hardening improvement of nano and microcomposite Al /TiC.

Abstract

The present investigation aims to study the improvement of the composite surface hardness by air abrasive jet polishing (AJP) of SiO₂ particles. The experiments were conducted by synthesizing Al-TiC composites through melting the aluminum at 850°C and added TiC gradually for 10 minutes to the liquefied aluminum with different sizes and ratios (300-500 nm and 100-200 μm) and (5, 10, 15, 20 and 25 wt.%) respectively of TiC. The molten Al-TiC was poured to a previously prepared sand mould. The hardness improvement for pure Aluminum, Al- micro-TiC and Al- nanoTiC composites were 7%, 11%, and 15% respectively. The obtained results demonstrate the importance of superficial hardening of composites Al-TiC by impact of the SiO₂ air jet and show that the surface hardness improvement is greatest for the nanocomposites compared with microcomposite and pure matrix material.

https://www.researchgate.net/profile/Malek-Ali-2/publication/339597403_Superficial_hardening_improvement_of_nano_and_micro_composite_Al_TiC/links/5eacad5c299bf18b958e2fa6/Superficial-hardening-improvement-of-nano-and-micro-composite-Al-TiC.pdf

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