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The effect of TiBAl addition on the ductility of squeeze cast eutectic Al-Si alloy

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This paper investigates the role of TiBAl as a refiner on the ductility of the eutectic Al-Si alloy processed by squeeze casting method. Gravity casting and squeeze casting were carried out on an aluminium alloy with 12 wt% silicon with the addition of different amount of TiBAl refiner. Investigations on mechanical and microstructural characteristics were done on specimens drawn directly from cast components. Although significant improvements were noticed in mechanical properties and microstructural characteristics with the increase of pressure, remarkable increase was not observed with the addition of grain refiner in the case of squeeze casting.

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Optical and electrical properties of chemically deposited CdS thin films annealed in different atmospheres

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Cadmium sulfide films were deposited onto glass substrates by Chemical Bath Deposition (CBD) from a bath containing cadmium acetate, ammonium acetate, thiourea, and ammonium hydroxide. The CdS thin films were annealed in air, argon, hydrogen and nitrogen for 1 h at various temperatures (300, 350, 400, 450 and 500 °C). The changes in optical and electrical properties of annealed treated CdS thin films were analyzed. The results showed that, the band-gap and resistivity depend on the post-deposition annealing atmosphere and temperatures. Thus, it was found that these properties of the films, were found to be affected by various processes with opposite effects, some beneficial and others unfavorable. The energy gap and resistivity for different annealing atmospheres was seen to oscillate by thermal annealing. Recrystallization, oxidation, surface passivation, sublimation and materials evaporation were found the main factors of the heat-treatment process responsible for this oscillating behavior. Annealing over 400 °C was seen to degrade the optical and electrical properties of the film.

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