

## عنوان مقاله:

Effects of Micro and Nano Sized SiC Powder on the Rheological Properties of Al Based Feedstocks for Low Pressure Injection Molding

## محل انتشار:

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## خلاصه مقاله:

This study investigates the effects of micro- and nano-sized SiC powder on the rheological behavior of Al based feedstocks for powder injection molding (PIM). Different compositions of Al feedstocks with additions of micro and nano-SiC powder were prepared and their rheological properties were measured with a rotational rheometer. The effects of SiC content and shear rate were investigated and activation energies were compared amongst the feedstocks. The results showed that nano-SiC powder has a prominent effect on the viscosity and yield stress whereas micro-SiC does not have an effective role and the base micro-Al powder determines the overall rheological behavior of the feedstock. It was found that the feedstocks reveal pseudoplastic behavior at low shear rates and dilatancy at high shear rates. The critical shear rate ( $\dot{\gamma}_{crit}$ ) was 100 s<sup>-1</sup> for changing the rheological behavior. The activation energy of a given feedstock was found to increase with micro-SiC content while the reverse trend was observed for nano-SiC

## کلمات کلیدی:

Injection Molding Al-SiC SiC Nanoparticles Rheology

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