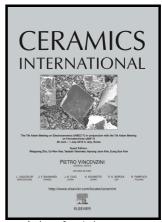
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ACCEPTED MANUSCRIPT

Influence of a few important parameters on the rheological behaviour of silicon carbide nanoparticles dispersed aqueous suspension

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Abstract

In this study, investigations have been carried out on the effect of a few important parameters

such as molecular weight and concentration of dispersant (polyethyleneimine) as well as that

of pH on the rheological behaviour of aqueous suspension comprising silicon carbide (SiC)

nanoparticles. In addition to this, the effect of particle size and addition of finer SiC particles

on the rheological behaviour of SiC suspension have been examined. It is observed that

viscosity of suspension increases with the increase in molecular weight of dispersant and

decreases as the concentration of dispersant increases. Further, it is noticed that viscosity of

the suspension progressively increases below the pH \approx 7.6 and above the pH \approx 9.3, indicating

that minimum viscosity i.e. maximum stabilization of suspension is obtained within the pH

range of \approx 7.6-9.3. It has been observed that variation of SiC particle size from

submicrometer to nanometer range and addition of nanometric SiC powder in SiC suspension

containing coarser particles increase the viscosity significantly.

Keywords: Nanometric silicon carbide; viscosity; molecular weight; dispersant; pH.

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