

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**An improved differential effective medium model for the viscosity of hard sphere suspensions at arbitrary volume fractions.** CARLOS MENDOZA, Materials Research Institute- UNAM, IVAN SANTAMARIA-HOLEK, Facultad de Ciencias-UNAM — We propose a simple and general model accounting for the dependence of the viscosity of a hard sphere suspension at arbitrary volume fractions. The model constitutes a continuum-medium description based on a recursive-differential method where correlations between the spheres are introduced through an effective volume fraction. In contrast to other differential methods, the introduction of the effective volume fraction as the integration variable implicitly considers interactions between the spheres of the same recursive stage. The final expression for the viscosity scales with this effective volume fraction which allows to construct a master curve that contains all the experimental situations considered. The agreement of our expression for the viscosity with experiments at low- and high-shear rates and in the high-frequency limit is remarkable for all volume fractions.

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Date submitted: 17 Nov 2008

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