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# Invention in Electrorheological fluids using nano particles

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## *Abstract:*

New fluids called as smart fluids are gaining popularity as they undergo instantaneous changes in their properties by application of external magnetic or electric field. Electrorheological (ER) fluid is one such type of smart fluid which undergoes instantaneous and reversible property change according to applied electric field. When high voltage is applied ER fluids change their form from viscous liquid to semisolid in fraction of seconds. This change in form of ER fluid from viscous liquid to semisolid is reversible. This property of ER fluid to change from viscous liquid to semisolid can be utilized in vibration absorbers. ER fluids are suspensions in which metal oxides, silicates, silica, organics or polymers are dispersed in an insulating oil. The dispersed particles are of very small quantity i.e. low concentration to allow fluid to maintain low viscosity at normal condition (without electric field) ER fluids are suspensions containing dielectric particles of micro or nano size. These fluids normally exhibit fluid like behavior but when comes in contact of electric field they get convert into semisolid. In this investigation effect of external electric field on ER properties of multiple non-Newtonian fluids with addition of Al2O3 and TiO2nano particles were studied. The ER properties were measured for different range of Al2O3 and TiO2nano particles concentrations and direct current electric voltage using concentric cylinder rotary rheometer.

## *Biography*

Aditi D. Apte is student is Ph.D. student in Visvesvaraya Technological University, Belgavi

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