

## SEMINARS @ CENIMAT

### INVITED SPEAKERS



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**September 25<sup>th</sup>, 2017 | 11H00**  
**Anfiteatro Leopoldo Guimarães**

## EVALUATION OF THE ELECTORHEOLOGICAL PROPERTIES OF NANOSTRUCTURED COMPLEX FLUIDS

Rheology is the science which studies the deformation and flow of the matter under the application of external forces. Hence, linear viscoelasticity and viscous flow tests provide information on the material non-perturbed microstructure, and its resistance to continuous flow.

A particular case of rheology is electro-rheology, which studies the viscous flow and viscoelastic properties when the material is subject to the application of increasing electric fields perpendicular to the shear direction. This phenomenon is observed in suspensions constituted by polarizable particles in non-conducting fluids. This type of smart fluids is the basis for the control of mechanical devices like hydraulic valves, clutches, brakes, etc.

The goal of this work is to characterize the viscous flow and linear viscoelastic behavior of suspensions of polyaniline-graphene or polyaniline-tungsten oxide nanoparticles in Newtonian-type silicone oils with varying viscosities of 20, 50 and 100 cSt under increasing electrical fields, at different temperatures.