

## **Size, concentration and viscosity analysis of dust nanoparticles aqueous solutions**

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Nanotechnology is one of the most talked about and developing branches of today, due to the great investments and the expectations of applicability. The increasing mass production of nanometer-scale materials tends to increase the concentration of particles of this size in the environment. In this way, it is necessary to understand the impacts of these particles on human health and on animal and plant life. The present work aimed to study, in particular, the physical and flow characteristics of the aqueous solutions, since with the rain the dust forms solutions and tends to percolate in the soil, formed by dust residues, removed from a ventilator exposed to the atmospheric pollution of the neighborhood Vila Santa Cecilia in the city of Volta Redonda, and ultrapure water. Regarding the solutions, the particle size, concentration and viscosity were evaluated for different decantation times. The data were organized in graphs that demonstrated the behavior of these properties. The results obtained for the viscosity were adjusted with the aid of the SAS<sup>®</sup> software to a quadratic multiple regression model to describe how this property varied simultaneously with the temperature, concentration and decantation time. The fit of the model was considered good according to the determination coefficient. The Einstein, Vand and Batchelor models were also applied to the experimental data in order to predict the viscosity of the studied solutions. The predictions generated with the applied models were compared to the experimental data in order to define the best fit.