Rheology of fats and their coating characteristics

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Lots of particles used in the pharmaceutical and the food industry are coated to protect the core material. But almost no investigations about the material behavior do exist. In this study the focus was on the rheological material properties of fat based coating materials.

Rheology is defined as the science of deformation and flow of matter. The rheology knows two different idealized behaviors of materials: ideal elastic behavior and ideal viscous behavior. But all real materials are viscoelastic. That means the simultaneous existence of viscous and elastic properties in a material.

Rotational shear experiments to determine the viscosity of a material were compared to oscillatory shear tests to get information about the vicoelastic behavior of the coating materials. At the liquid state the viscosity and the viscoelastic properties show a good agreement. Coating materials that have the same viscosity and viscoelastic behavior at the liquid state can evidence a different viscoelastic behavior at the solid state. The behavior at the solid state is very important to predict the coating layer.