



Invited speaker of GFR 2024

## How a pinch of polymer in a granular medium dramatically modifies the rheology

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Coating processes are widely used in the powder industry. Their role is complex, as the coating can promote the flowability of the material, but also introduce cohesion between the particles. In this talk, I will present a study of the rheology of a model material composed of silica particles coated with a thin layer of PBS (polyborosiloxane). We show that the presence of the polymer coating considerably modifies the rheology by introducing complex lubrication effects. By combining pressure-imposed rheology on the bulk material, particle-scale tribological measurements and discrete numerical simulations, we are able to understand the complex role of the coating and propose a mean-field theory for predicting the rheology from the particle properties.

