

Article

Tuning the Shape of Spray-Dried Pullulan Particles Through the Feed Rheological Behavior

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Supplementary Information

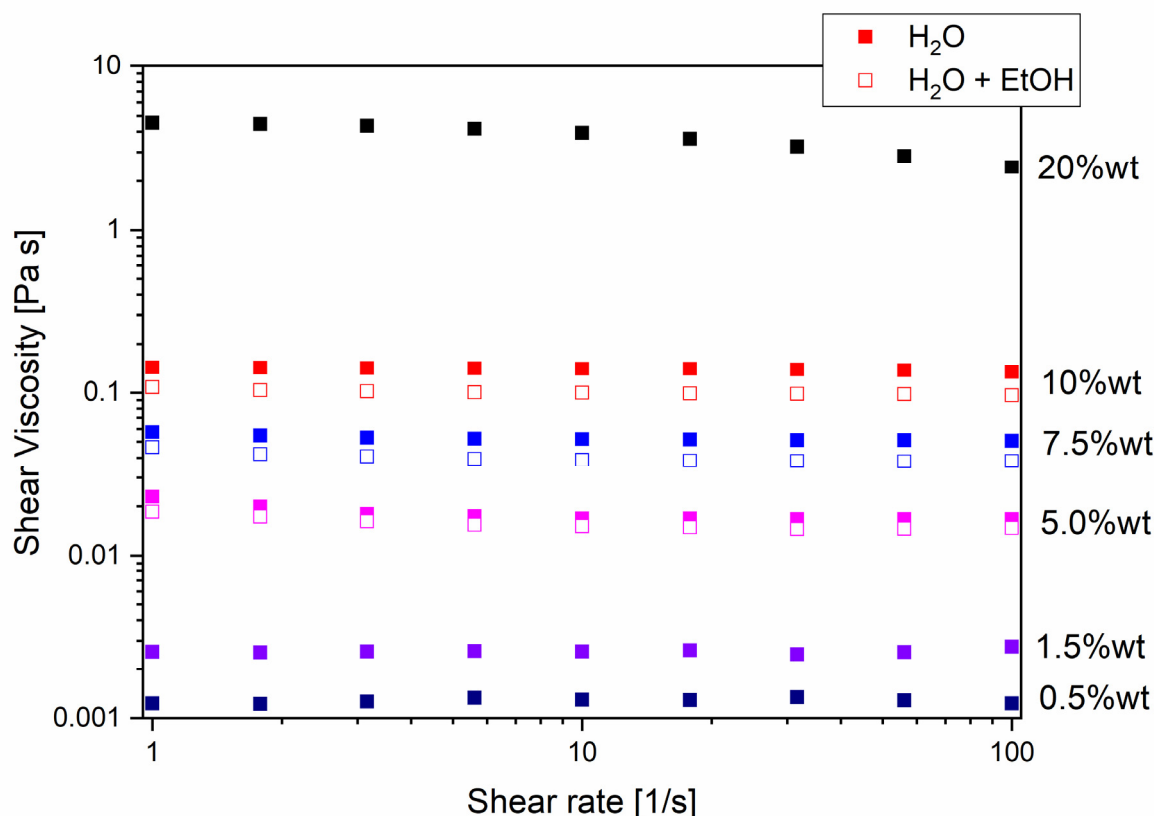


Figure S1. : Viscosity curves for Pullulan aqueous (filled points) and hydro-alcoholic (hollow points) at different concentrations. Concentration (%wt/wt) refer to Pullulan concentration in aqueous solution, before dilution with ethanol. In considered shear rates range the solutions display a Newtonian behavior up to a concentration of 10%wt/wt.

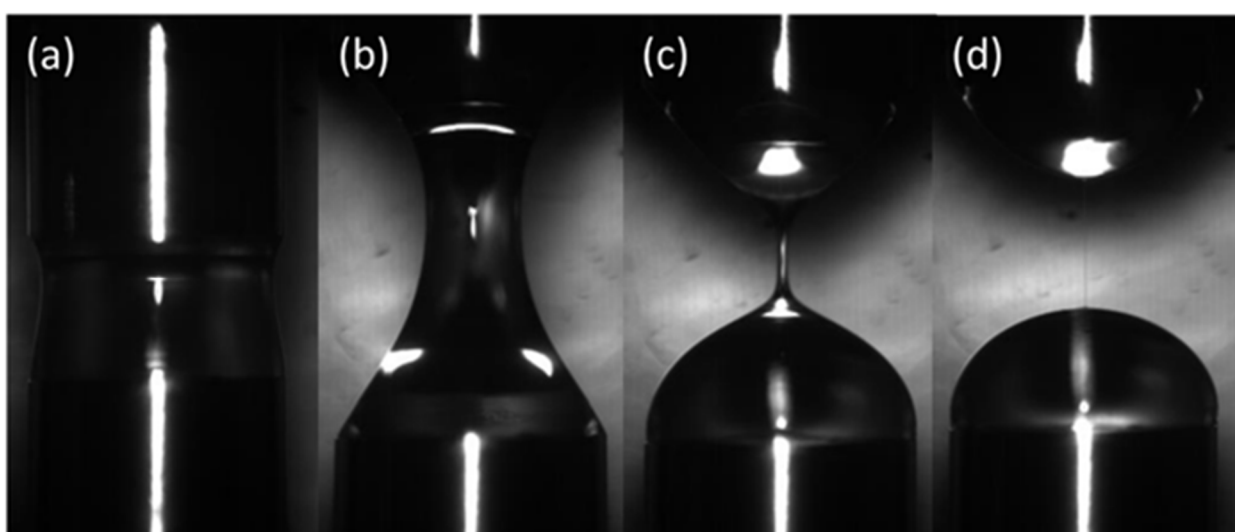


Figure S2. Filament evolution during Capillary Break up experiment for an aqueous solution of Pullulan (10 %)wt/wt. a) before plates motion $t=0$; b) during plates motion, $t=34\text{ms}$; c) at $t=104\text{ms}$; d) at $t=136\text{ms}$, just before breakup.

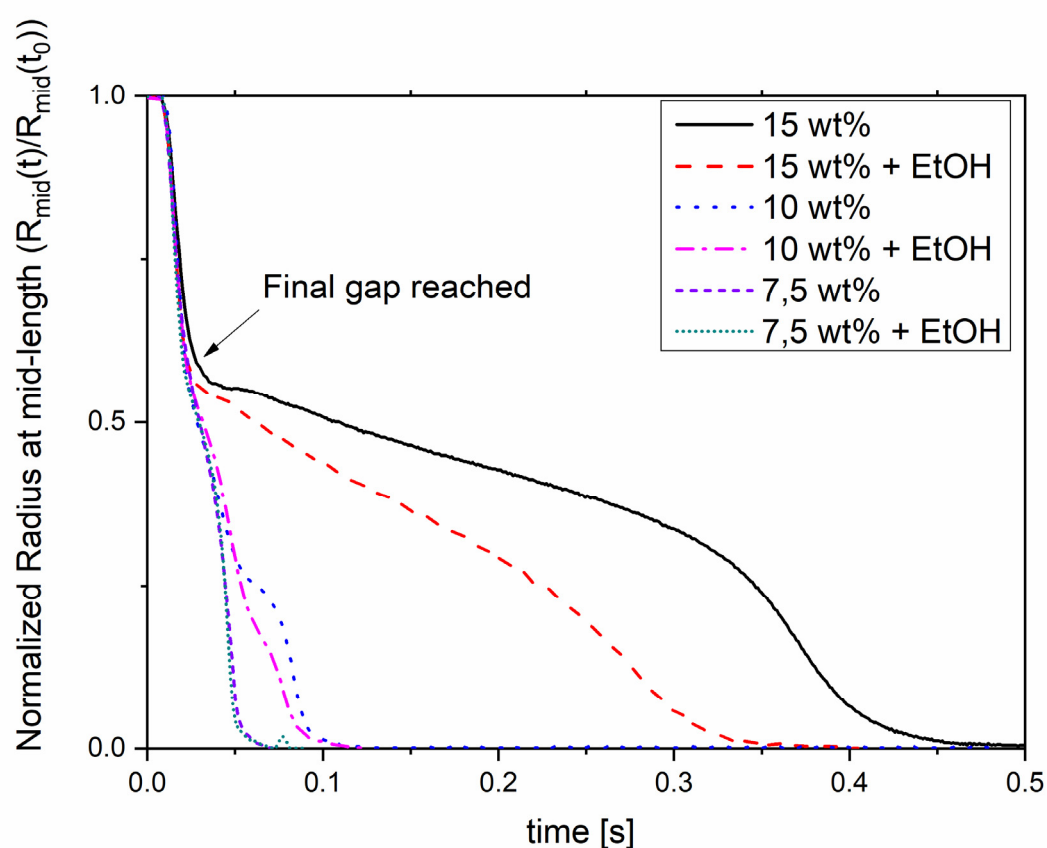


Figure S3. Time evolution of the filament radius (measured at the filament mid-length, and normalized with respect to the initial one) versus time for aqueous and hydro-alcoholic Pullulan solutions at different concentrations. The arrow indicates the time at which the moving plate reaches its final position: from this point on surface tension driven thinning occurs. The reduction in the thinning rate at times close to breakup indicates the dominance of the elastic response. In this zone equation 4 of the manuscript applies.

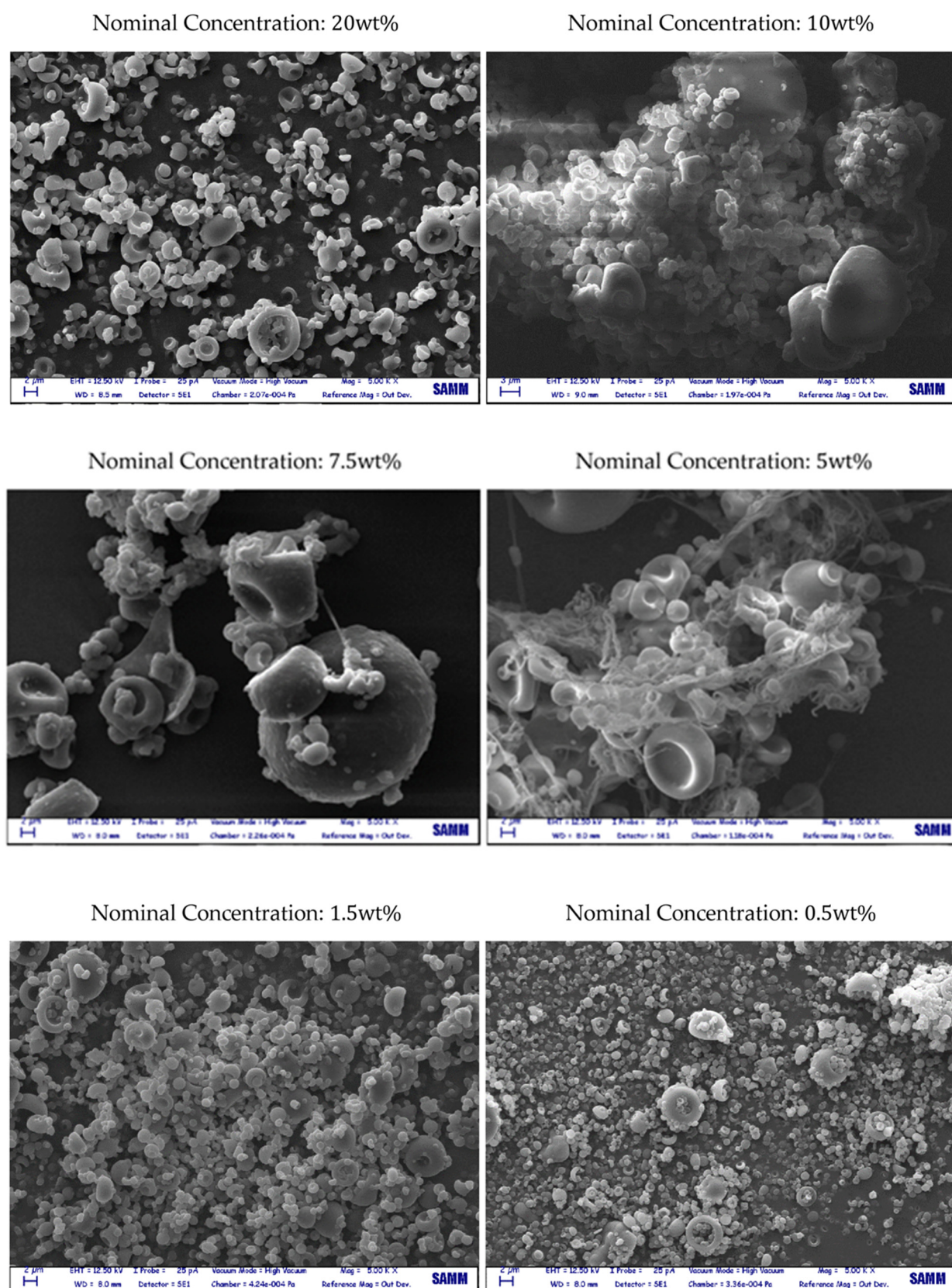


Figure S4. Morphology of powders obtained by spray drying of Pullulan aqueous solutions at different concentrations. Magnification 5000 x. The nominal concentration is expressed in terms of Pullulan percentual mass in the solution before the dilution with Ethanol.

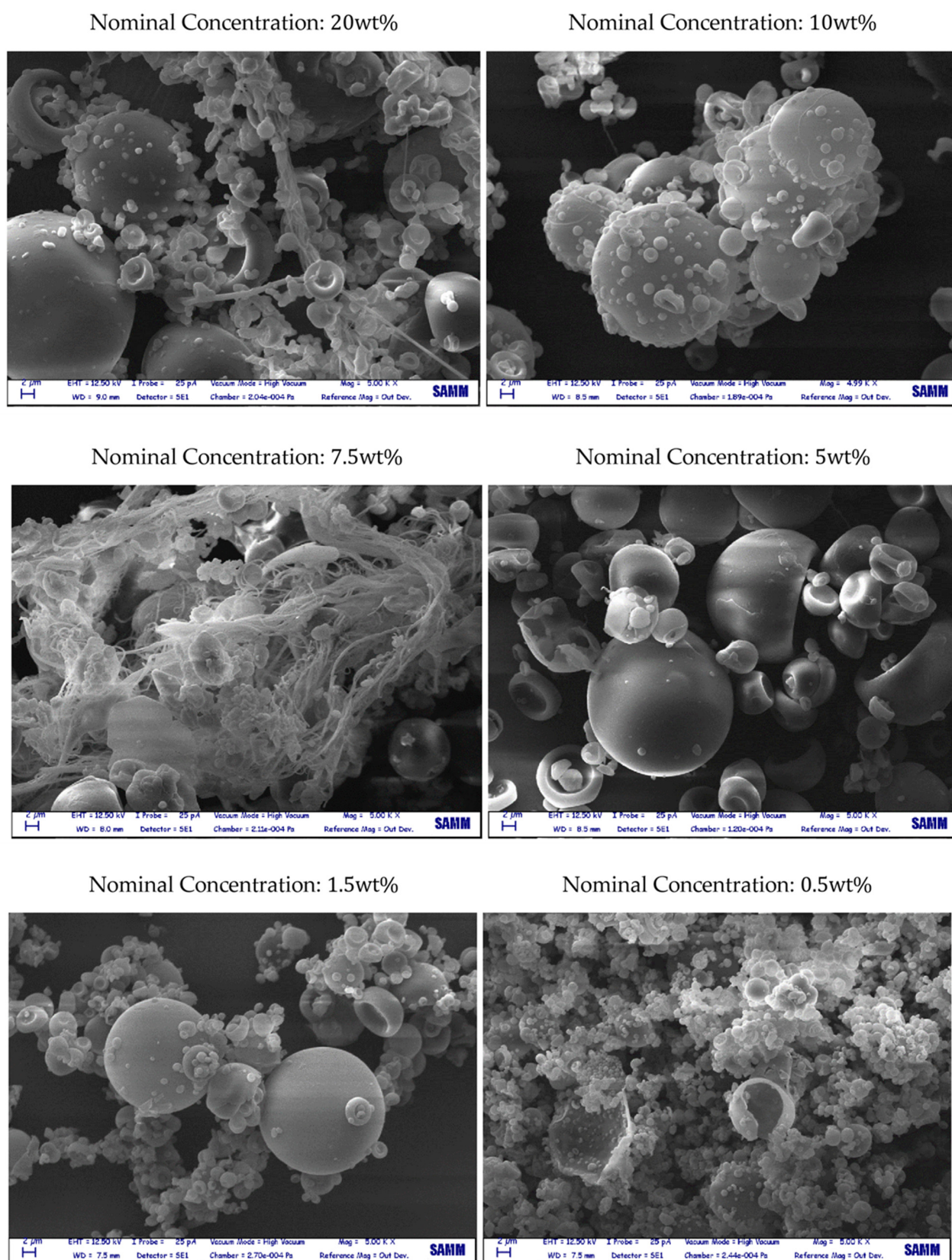


Figure S5. Morphology of powders obtained by spray drying of Pullulan hydro-alcoholic solutions at different concentrations. Magnification 5000 x. The nominal concentration is expressed in terms of Pullulan percentual mass in the solution and is referred to the aqueous solutions before the dilution with ethanol.