

Capillary Action of Entangled Polymer Solution : flow instability driven contact angle change

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Flow instability has shown in various complex fluids whose usages are wide such as oil recovery, food industry, cosmetic and bio-fluid process. At the same time, these fluids' flow behavior in porous medium can be modeled as single or assembly of capillary action. Capillary action of Newtonian fluids is understood as Hagen-Poiseuille flow without consideration of axial dependency. Also the flow behavior can be applied to shear thinning fluids with power law. We present the capillary action of entangled polymer solution. It has both yield stress and strong shear thinning. These property attribute to flow instability at stress-shear rate flow curve so that shear banding has reported. Cause the entangled polymer solution shows different capillary rise behavior with previous classical fluids, here we analyze this phenomenon with focus on dynamic contact angle.