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Experimental investigation of the clustering of particles in non-Newtonian liquids in stirred vessels¹ GIOVANNI MERIDIANO, WEHLIYE HASHI WEHLIYE, LUCA MAZZEI, PANAGIOTA ANGELI, University College London — The blending of solid particles with liquids is a crucial step in many manufacturing processes; it is regularly encountered in industrial sectors like healthcare, pharmaceuticals and food processing. Stirred tanks are commonly used in industry to process solid – liquid mixtures principally because of their flexibility, relative construction simplicity and availability. Recent studies have proposed stirred tanks as a tool to achieve the separation of the solids suspended in Newtonian liquids (Wu *et al.* 2015). In this study, the investigation of the clustering of particles in non-Newtonian liquids in stirred vessels is presented. A viscoelastic liquid was chosen that had matching refractive index with the suspended particles and a novel combination of *PLIF* and *PIV/PTV* techniques was used to measure the velocity fields of the particles and of the fluid simultaneously as well as the evolution of the concentration of the particles in the tank. It was found that the particles accumulated in the cores of the vortices. In addition, the accumulation speed was found to be dependent on the viscoelastic properties of the fluid and on the diameter of the solid particles

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