

Abstract Submitted
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Imaging Contrast Effects in Alginate Microbeads NINA SHAPLEY¹, HOLLY HESTER-REILLY, Columbia University — We have investigated the use of alginate gel microbeads as contrast agents for the study of suspension flows in complex geometries using nuclear magnetic resonance (NMR) imaging. These deformable particles can provide imaging contrast to rigid polymer particles in a bimodal suspension (two particle sizes). Microbeads were formed of crosslinked alginate gel, with or without trapped oil droplets. Crosslinking of the aqueous sodium alginate solution or the continuous phase of an oil-in-water emulsion occurred rapidly at gentle processing conditions. The alginate microbeads exhibit both spin-spin relaxation time (T₂) contrast and diffusion contrast relative to both the suspending fluid and rigid polystyrene particles. Large alginate emulsion microbeads flowing in the abrupt, axisymmetric expansion geometry can be clearly distinguished from the suspending fluid and from rigid polymer particles in both spin-echo and diffusion weighted imaging. The alginate microbeads, particularly those containing trapped emulsion droplets, offer potential as a positive contrast agent in multiple NMR imaging applications.

¹Membership Pending

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