

Abstract Submitted
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Electrospray fabrication and osmotic response of fluid core-viscoelastic shell microcapsules ZHIYONG MENG, CHINEDUM OSUJI, Yale University — Microcapsules with fluid-core in viscoelastic shell is interesting partially because of their unusual elasticity/rigidity. Electrospray technique, more flexible and scalable than traditional bulk and microfluidic emulsification, was used to generate spherical microcapsules. In particular, sodium alginate fine droplets generated by electrospray was surface cross-linked by either Ca(II) or chitosan to form polyelectrolyte microcapsules. By adjusting the needle inner diameter, concentration of sodium alginate, and applied voltage, we can control the droplet size to the designated range. Furthermore, we can tune the thickness and thereby rigidity/elasticity of the viscoelastic shell by adjusting the residence time of microcapsules in gelation solution to control the rigidity/elasticity of microcapsules. These polyelectrolyte microcapsules were subject to the osmotic pressure of synthetic water-soluble polymers, such as poly(ethylene glycol), with progressively lower concentration to observe their osmotic swelling behavior.

Zhiyong Meng
Yale University

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