

Abstract Submitted
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Soaking it up: new lipid sponge phases and their applications¹

CHRISTOPHER BRASNETT, Department of Physics, University of Bristol, UK, ANNELA SEDDON, Department of Physics; Bristol Centre for Functional Nanomaterials, University of Bristol, UK — Recent work has demonstrated that cubic lipid systems may be doped with charged lipids, with important consequences for their physical properties. Among others, Tyler et al. have reported some of the largest lipid cubic phases seen to date using this technique². The sponge phase is a disordered bicontinuous phase, formed when the membrane curvature of a cubic phase is reduced through the addition of butane diol³. Additionally, it is known that sponge phases may be converted back into highly ordered cubic ones⁴. Whilst past work has concentrated on sponge phases formed from monoolein, we have investigated the properties and behaviour of a bipartite sponge phase formed of monoolein and DOPG, and their conversion to cubic phases using shear. Furthermore, as both the sponge and cubic phase are of interest with respect to their applications in protein crystallography⁵, we have explored the interaction of the protein light-harvesting complex with the lipid system.

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²A. Tyler et al. *Soft Matter*, **2015**, 11, 3279-3286

³V. Cherezov et al. *J. Mol. Biol.* **2006** 357, 1605-1618

⁴A. Seddon et al, *J. Am. Chem. Soc.*, **2011**, 133, 13860

⁵A. Wöhri et al. *Structure* **2008**, 16, 1003-1009

Christopher Brasnett
Department of Physics, University of Bristol, UK

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