

# Bijel capsules: A new type of encapsulated geometry

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The bi-continuous, interfacially jammed emulsion gel (bijel) is a new class of soft solid material that has been developed at the University of Edinburgh.<sup>(1,2)</sup> The bijel consist of two bi-continuous liquid channels that are separated and maintained by a monolayer of particles at their interface. The characteristic length scale of the bijel can be tuned from single to hundreds of microns and it is expected that the bijel will find application in a number of areas – from microfluidics to advanced electronics.

Recently, the bijel has been encapsulated within emulsions droplets to form bijel capsules.<sup>(3)</sup> Bijel capsules are the first particle stabilised emulsions to hold a bi-continuous morphology and their unique design offers numerous encapsulation and release advantages. In particular, mixing of the capsules' encapsulated components can be triggered by heating beyond a threshold temperature.

In this presentation, the capsules' method of fabrication, their encapsulation advantages and their potential applications will all be discussed. The development of bio-compatible bijel capsules that are appropriate for use in cosmetics and foods will also be outlined.

*K. Stratford et. al. Science, 309, 2198-220, (2005)*

*E.M. Herzig et. al., Nature Materials 6, 966 - 971 (2007)*

*J.W. Tlavacoli et. al., Advanced Functional Materials 21, 2020–2027, (2011)*