

Abstract Submitted  
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**Ordering and partitioning in vesicle forming block copolymer thin films**<sup>1</sup> ANDREW PARNELL, University of Sheffield, YOHEI KAMATA, Kuraray Ltd., RICHARD JONES, University of Sheffield — Cell biology routinely uses encapsulation processes to package a payload and transport it to a location where the payload can then be used. Synthetic polymer based liposomes (Polymersomes) are one possible way in which we can artificially contain a molecule of interest that is protected from its surrounding environment. Encapsulation technologies at present rely on forming a lipid vesicle and then extruding it in a solution containing the target molecule to be encapsulated. Only a small fraction is encapsulated in this process. This is because of the complex structural formation pathway in going from individual isolated amphiphilic molecules into vesicle aggregates. My talk will discuss strategies to overcome the formation pathways, by forming a block copolymer film with the target molecule and then solvent ordering prior to the formation of vesicles. By studying block copolymer thin films with neutron reflectivity and ellipsometry we are able to observe partitioning and ordering which is essential for high encapsulation efficiencies.

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