P.47 Self-assembly of naphthalene-dipeptides to form hydrogel films at the air-water interface

T Li[1], M Kalloudis[2], D J Adams[3] and P S Clegg[1]

[1]School of Physics and Astronomy, University of Edinburgh, UK, [2]Institute for Materials and Processes, School of Engineering, University of Edinburgh, UK, [3]Department of Chemistry, University of Liverpool, UK

Supramolecular gels from the self-assembly of peptide amphiphiles are widely used for a range of technological applications, such as controlled drug release, cell culture, template materials and tissue engineering. Gelation can be introduced by decreasing the pH, which protonates the carboxylic acid and make the molecular more hydrophobic. Compared with bulk hydrogel, thin films of assembled peptides have higher thermal stability and mechanical durability, and also open the possibility of studying their interfacial properties. In my experiments, different naphthalene dipeptides (NapFF and BrNapFF) have been successfully trapped at an air-water interface by depositing the dipeptide solution onto a low pH subphase. The mechanism for interfacial trapping has been studied. Both FTIR spectra and AFM images are used to research the structure of these films. In addition, measurement using a Langmuir trough shows that these films are elastic. Finally, these films are able to stabilize large air bubbles for several days.