Investigation of gel behavior in FmocF-F_n polipeptides

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Hydrogel constitute a group of polymeric materials, whose hydrophilic structure renders them capable of holding large amounts of water in their three-dimensional networks. The development of hydrogels capable of supporting the growth and proliferation of cells for tissue engineering applications is a rapidly expanding field of study [1], [2]. Some hydrogels are able to respond to stimuli of their surrounding environments. Examples of these stimuli include light, temperature, pH, and the electrical field.

A biocompatible gels such as Fluorenylmethyloxycarbonyl-L-phenylalanine (FmocF) is used for biomedical application. Unfortunately, the gelation mechanism in these systems remains poorly understood, thus strongly limiting their potential application. We explored two different gelation routes, a combined change in Temperature and concentration.

We studied the gel formation and structure by Dynamic Light Scattering (DLS), Fourier Transform Infrared Microscopy (FTIR) and Scanning Electron Microscope (SEM).

[1] A. Keller, A. Kolliod, Polymere 231 (1969) 386.
[2] B.Lotz, H. D. J Keith, Molec. Biol. 1971, 61. 201 .

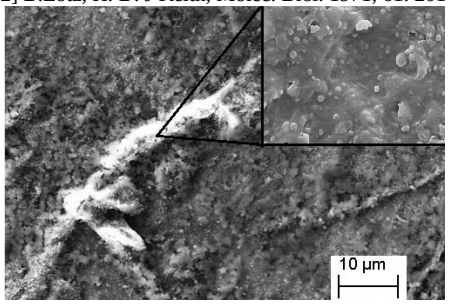

Figure 1. SEM Imaging of FmocF-FF. In the inset, zoom of sample on nanofiber.

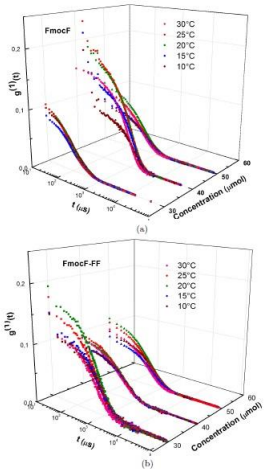

Figure 2. 3-Dimensional plot of g(1) vs concentration and correlation time at different temperatures near the gel transition for the FmocF (a) and FmocF-FF (b) systems.