

**Experiment title:**

A SAXS Study of the Enzymatic Degradation of PEGylated Peptide Nanostructures

Experiment number:

MX-1347

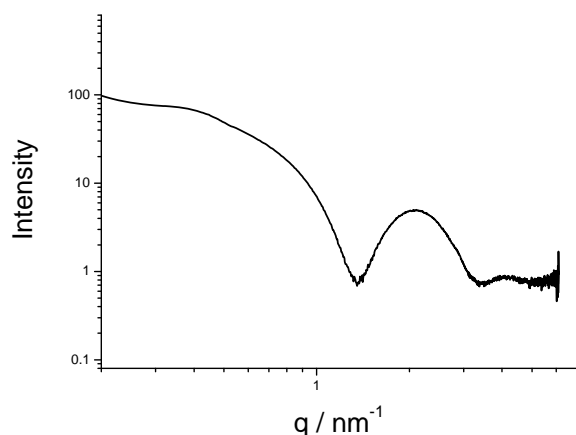
Beamline:	Date of experiment: from: 26/11/11 to: 28/11/11	Date of report: 30/1/13
Shifts:	Local contact(s): Petra Pernot	<i>Received at ESRF:</i>

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Report:

The PEGylated peptide mentioned in the proposal was not available, instead we examined the enzymatic degradation of the peptide amphiphile (PA) C₁₆-KKFFVLK using the serine protease α -chymotrypsin which is expected to selectively cleave between the two phenylalanine residues. In fact, mass spectrometry reveals C₁₆-KKF as the main cleavage product, but also with some C₁₆-KKFF. Fig.1 shows a SAXS profile from an 0.5 wt% solution of C₁₆-KKFFVLK before enzyme cleavage. This can be modelled using a flat bilayer form factor.¹

**Fig.1** SAXS data for an 0.5 wt% solution of C₁₆-KKFFVLK.

The data on the enzymatic cleavage of this PA is currently being prepared for publication. A study of the remarkable self-assembly of C₁₆-KKFFVLK (see Fig.2 for schematic) which built on initial results from this beamtime (and further beamtime MX1401, see associated beamtime reported) has been submitted for publication.¹ Further publications concerning the self-assembly of related peptides studied during this beamtime have been published.²

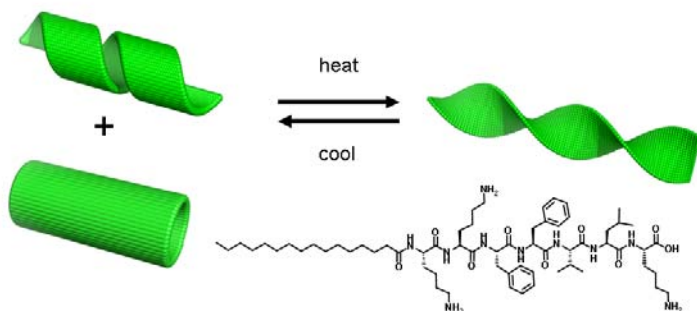


Fig.2. Schematic of the thermo-reversible transition, and (bottom right) structure of the peptide amphiphile.

References

- ¹ I. W. Hamley, A. Dehsorkhi, V. Castelletto, S. Furzeland, D. Atkins, J. Seitsonen and J. Ruokolainen. *submitted*, 2013.
- ² I. W. Hamley, A. Dehsorkhi and V. Castelletto. *Chem. Comm.*, 2013, in press. DOI: 10.1039/C3CC39057H