	Experiment title: A Time-Resolved SAXS Study of Multi-Walled Nanotubes Formed by Catanionic Mixtures of Drug Amphiphiles	**Experiment number**: MX-1606
Beamline:	**Date of experiment**: from: 9/4/14 to: 12/4/14	**Date of report**: 14/8/15
Shifts:	**Local contact(s)**: A. Round	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

I. W. Hamley and A. Dehsorkhi**, Dept of Chemistry, University of Reading, Whiteknights, Reading RG6 6AD, UK

Report:

An effort was made to measure SAXS data for the catanionic mixtures of drug amphiphiles forming multiwalled nanotubes as described in the proposal, however the samples were observed to form gels and could not be delivered using the automated capillary system. Therefore these samples were measured separately during other ESRF beamtime (on DUBBLE, and this data was published[1]).

Instead, the main focus of this beamtime was on solution SAXS measurements of other amphiphilic lipopeptides and peptides. So far, data for PamCSK4 Toll-Like Receptor (TLR) agonist lipopeptides has been published (cf. Fig.1).[2]

We are currently still working on the self-assembly of P_6K, P_6E and KP_6E which has proved to be unexpectedly interesting.

Data from this beamtime were also obtained for Apolipoprotein-AI mixed with peptide amphiphile $C_{16}G_3RGDS$ which was useful support for a SAXS study, data from several ESRF beamline sessions (including BM29 MX-1511) being included in a published paper.[3]

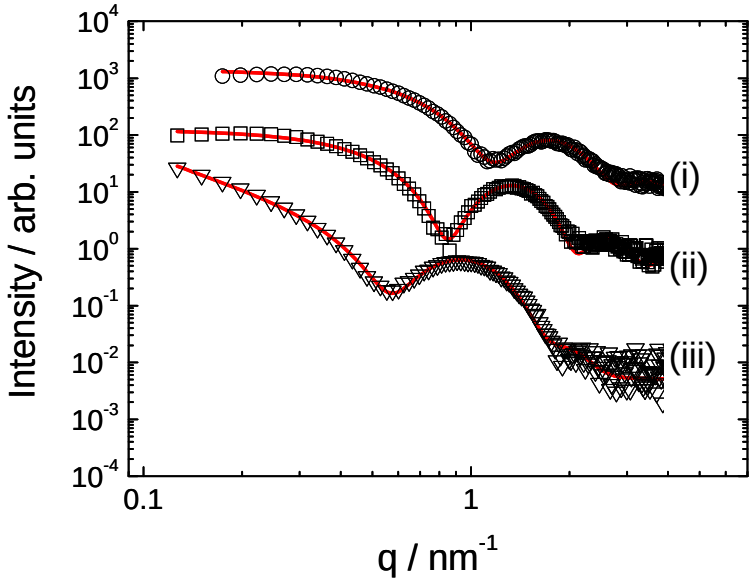

Fig.1. SAXS data with form factor models described in text for (a) PAMCSK4, (b) PAM_2CSK4, (c) PAM_3CSK4. The open symbols are the experimental data, the solid red lines are the model form factor fits described in our paper (parameters in SI Table 1).[2] Curves are offset for convenience, and only every 5th data point is shown.

References

(1) Lin, Y. A.; Cheetham, A. G.; Zhang, P. C.; Ou, Y. C.; Li, Y. G.; Liu, G. S.; Hermida-Merino, D.; Hamley, I. W.; Cui, H. G. *ACS Nano* **2014**, *8*, 12690.

(2) Hamley, I. W.; Kirkham, S.; Dehsorkhi, A.; Castelletto, V.; Reza, M.; Ruokolainen, J. *Chem. Comm.* **2014**, *50*, 15948.

(3) Castelletto, V.; Hamley, I. W.; Reza, M.; Ruokolainen, J. *Nanoscale* **2015**, *7*, 171.