	Experiment title: Superlattices from Hierarchical Self-Assembly of Amphiphilic Cylindrical Block Copolymers	**Experiment number**: SC4063
Beamline:	**Date of experiment**: from: 22/4/15 to: 24/4/15	**Date of report**: 14/8/15
Shifts:	**Local contact(s)**: T.Narayanan	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

*I. W. Hamley**, Dept of Chemistry, University of Reading, Whiteknights, Reading RG6 6AD, UK
I. Manners and H. Qiu, Dept of Chemistry, University of Bristol, Cantock's Close, Bristol

Report:

The aim as shown in Fig.1 was to observe the lattice ordering of giant lattices formed by the packing of cylindrical micelles of type P-H-P or H-P-H (Fig.1) where P and H refer to polar and hydrophobic segments. The cylindrical miclles are formed by the packing of block copolymer chains with a crystalline core of PFS, poly(ferrocenyldiemthylsilane). This is based on a high profile paper in Science published by the Manners group after submission of this proposal,[1] but before the beamtime was completed. The systems were of the type shown in Fig.1.

Superlattices from hierarchical self-assembly of amphiphilic cylindrical block co-micelles

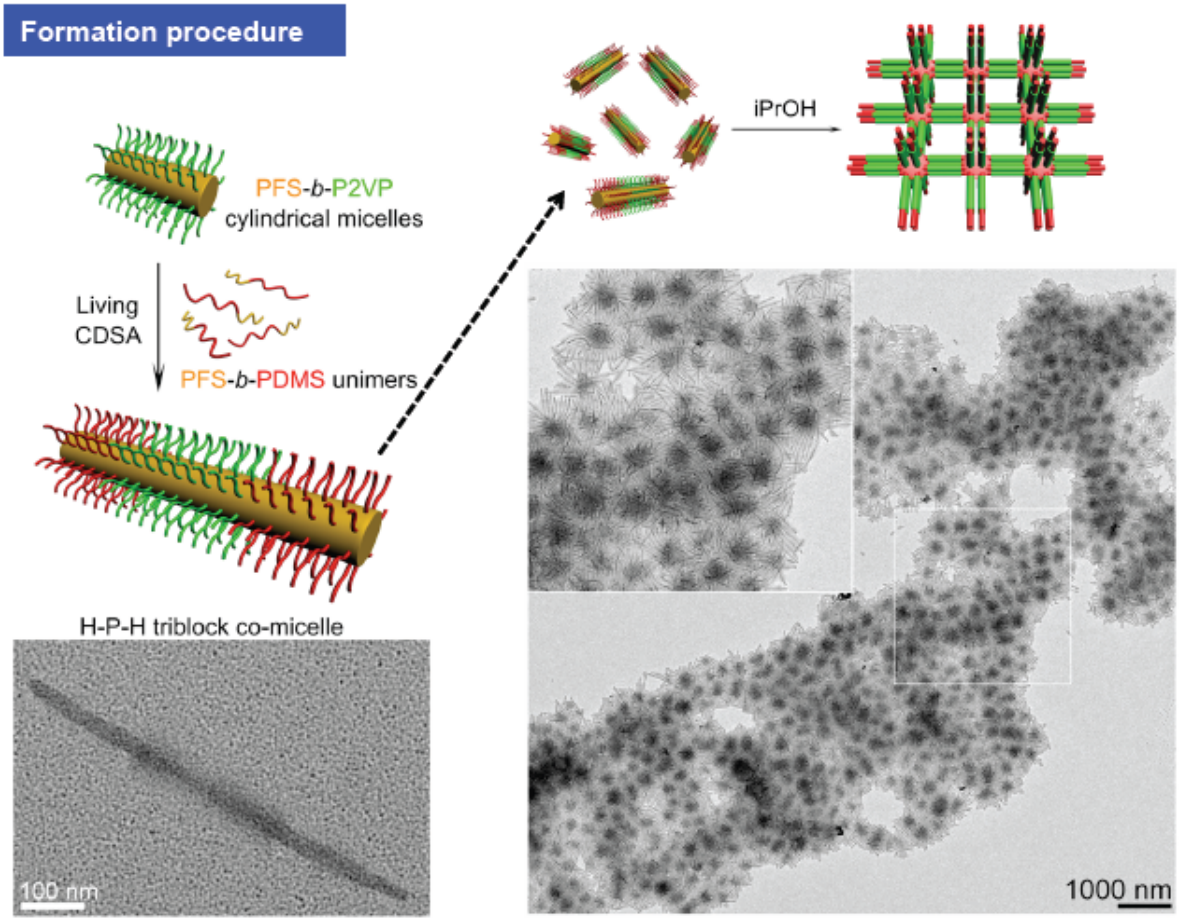

Fig.1.

SAXS Measurements on ID02 were performed with a long 10 m camera in order to capture Bragg peaks from large lattice structures (cf. Fig.1). In the case of several samples in iPrOH, broad lattice peaks were seen (e.g. Fig.2) although in other cases just form factor features were noted (this however is also useful information, as the data can to estimate micelle dimensions).

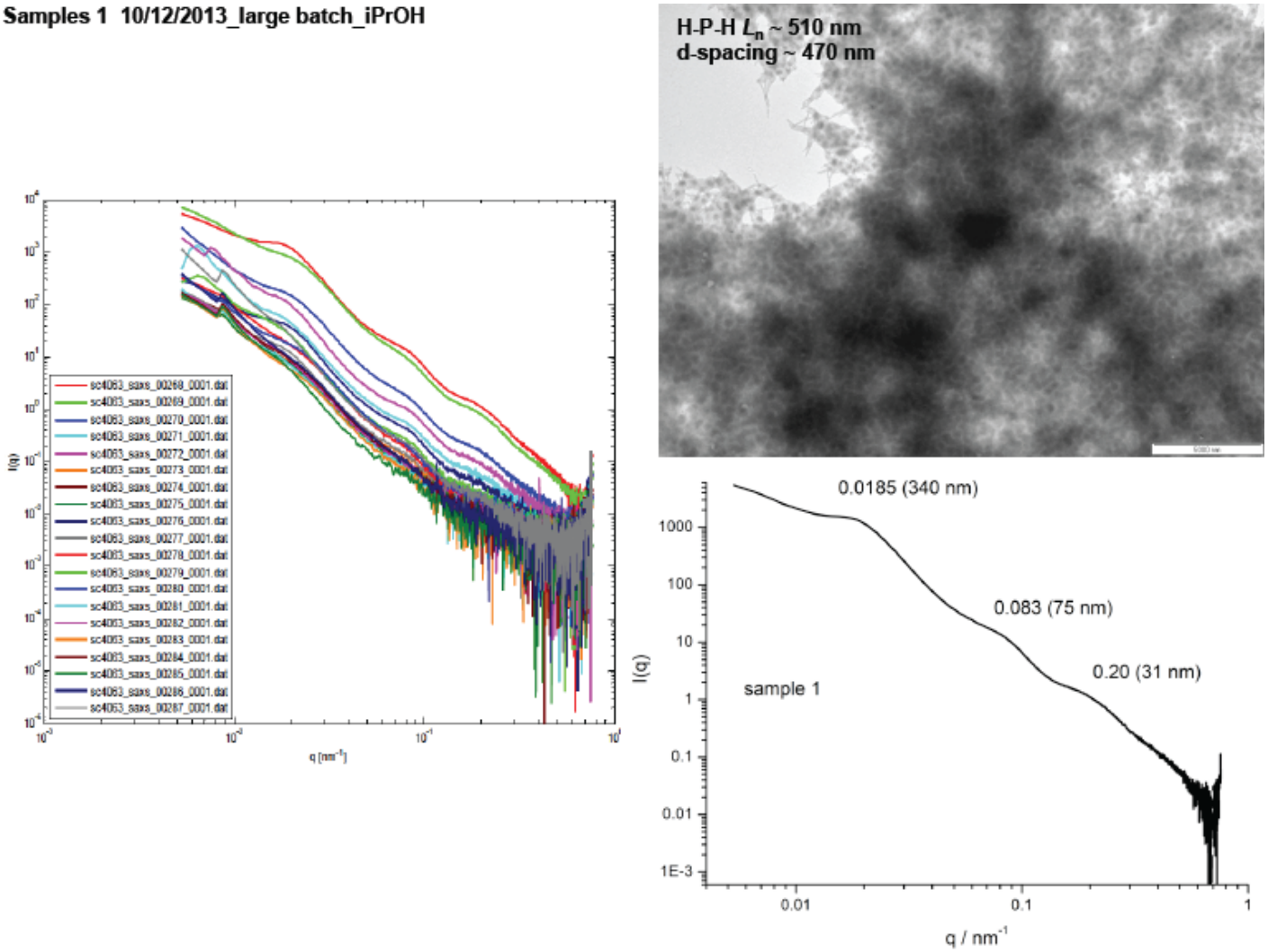

Fig.2

It is envisaged that this data will be included in forthcoming publications.

References

(1) Qiu, H. B.; Hudson, Z. M.; Winnik, M. A.; Manners, I. *Science* 2015, *347*, 1329.