Makoto Sakurai, J Nanomed Nanotechnol 2016, 7:4 (Suppl)
http://dx.doi.org/10.4172/2157-7439.C1.041

9th Nano Congress for Next Generation

August 01-02, 2016 Manchester, UK

New approach to biomolecular self-assembly through formation of peptide architectures by artificial supersaturation

Makoto Sakurai
National Institute for Materials Science, Japan

Biomolecular self-assembly is a bottom-up approach to form nano/microstructures through non-covalent interactions of biomolecules. Construction of desired functional structures by self-assembled growth is of fundamental interest for applications in fields such as biosensors, biodevices, tissue repair and for promising platforms in next-generation devices. Therefore, a deep understanding of the growth mechanism is required. However, growth process from nanoscale aggregations to hierarchical microstructures still remains unclear. Here, we report a new method of controlling and analyzing biomolecular self-assembly using a methanolic solution of short dipeptide diphenylalanine (FF), which has been known as a core recognition motif of Alzheimer's b-amyloid polypeptide. The *in situ* observation of its growth gives unique information to understand growth mechanism of simple microtubes and "diatom-like" porous microspheres, which are produced through the formation of a small nucleus in the artificial local supersaturation. Although it is a simple model system, the method and interpretation will pave the way for controlled growth of more complicated biological nano/microstructures.

Biography

Makoto Sakurai got his PhD from Keio University on the topic "Magnetism and Structure of Magnetic Superlattice". He studied mechanism of atom-manipulation using scanning tunneling microscope (STM) and also developed a new technique of STM-induced light emission from atomic structures with the atom-resolved spatial resolution, as a researcher at RIKEN and NIMS. He is studying new functionality caused by dynamic defects-manipulation in wide-band-gap oxide nano/microstructures to achieve new-type computing architectures from 2007 and is also investigating for controlled self-assembly of peptide/molecules from 2013, as a Senior Researcher at NIMS.

sakurai.makoto@nims.go.jp

Notes: