

Light-Patterned Self-Assembly of Nanoparticles

Donald Fitzmaurice,¹ Declan Ryan¹ and
Lorraine Nagle¹

¹Department of Chemistry
University College Dublin
Belfield
Dublin 4, --
Ireland

Near size-monodisperse nanocrystals and substrates have been modified with the constituent components of a [2]pseudorotaxane, namely dibenzo[24]crown- 8 and a photosensitive precursor to a dibenzylammonium cation, respectively.

Exposing the substrate to light converts the photosensitive precursor to a dibenzylammonium cation. The light-exposed region of the substrate now recognises and binds selectively the crown-modified nanoparticles.

Using conventional lithographic techniques, it is possible to induce the self-assembly of nanometer scale structures.

This innovation is highly significant as it combines many of the best features of conventional and soft lithographies.