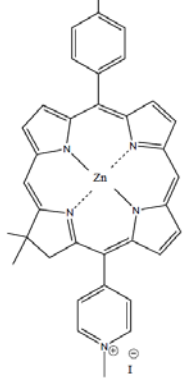
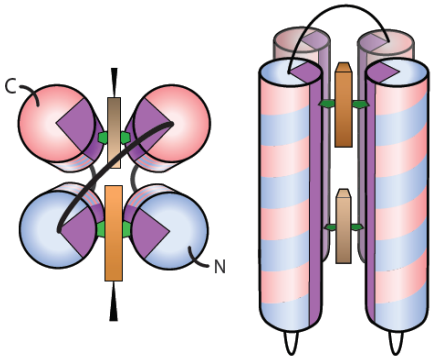
U.S. DEPARTMENT OF ENERGY | Office of Science

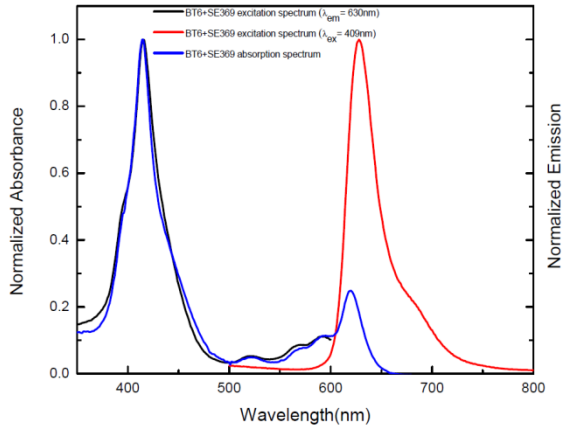
Nanopatterning of light-harvesting maquettes

SE369 chlorin

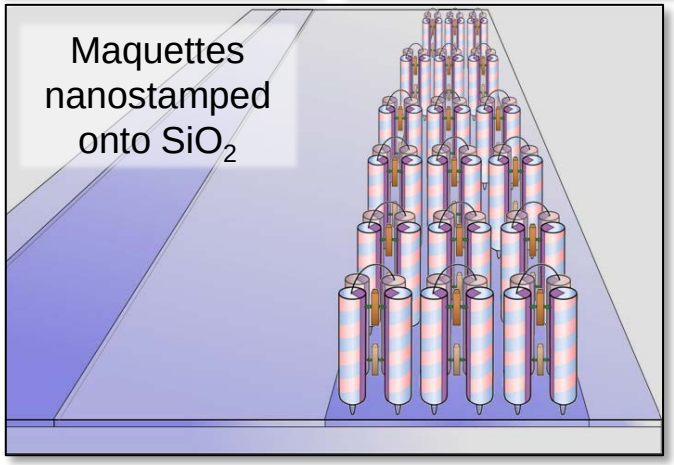


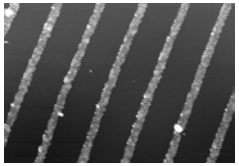
Chlorin+ BT6 maquette



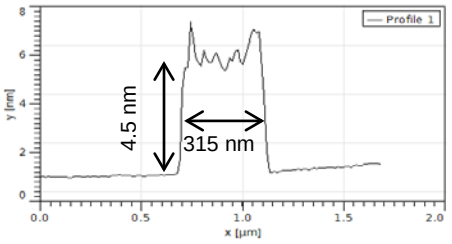


Maquettes nanostamped onto SiO_2

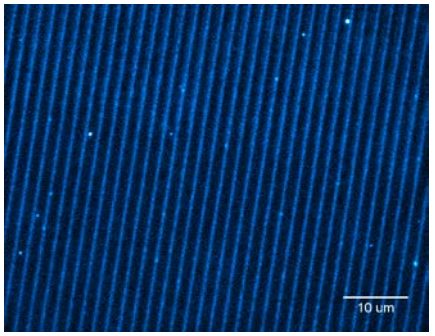




AFM of nanolines



Fluorescence imaging of nanolines

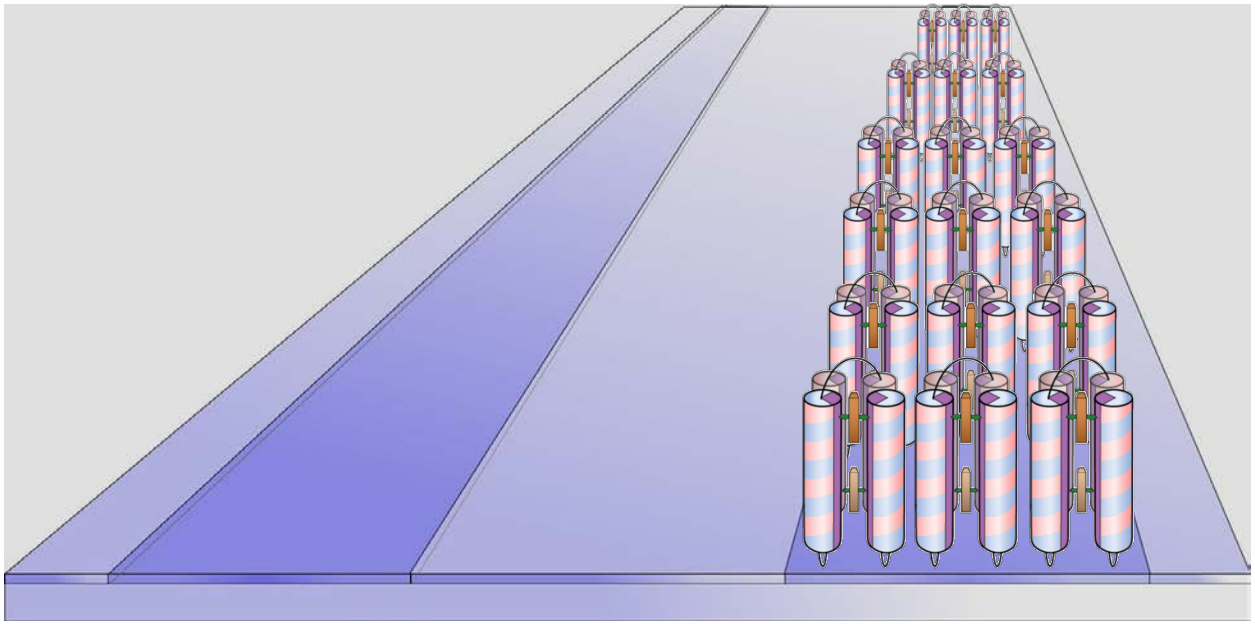


Photosynthetic Antenna Research Center PARC

Theme 1: Native Antenna
Theme 2: Biohybrid Antenna
Theme 3: Bioinspired Antenna

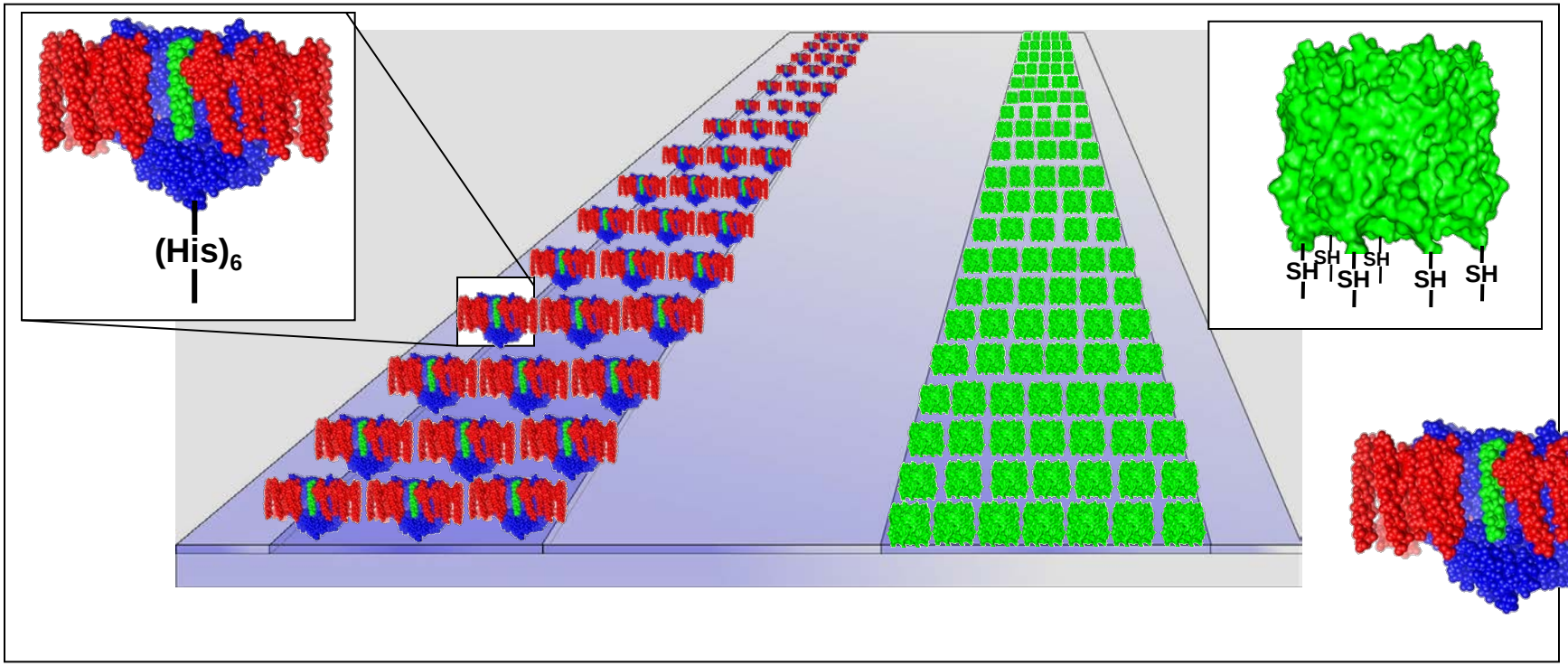
Gabriel Montano, Los Alamos National Laboratory
Jonathan Lindsey (North Carolina State University)
Goutham Kodali, Chris Moser, Les Dutton (University of Pennsylvania)
Cvetelin Vasilev, Ashley Cadby, Lin Wang, Samson Patole, Neil Hunter (University of Sheffield, UK)

Nanoscale patterning of protein arrays on glass



- Protein nanostructures, using YFP for example, can be fabricated on glass that retain high levels of optical activity.
- The capacity to fabricate structures smaller than the diffraction limit of optical microscopy, that can be characterized without fluorescence quenching, is important for potential applications in bionanotechnology.

Nanoscale patterning of RC-LH1 and LH2 arrays on glass



- $(His)_6$ The core RC-LH1-PufX monomer is 12 nm in diameter; LH2 complexes are 7 nm across.
- Nanolithography and nanoimprinting approaches are progressing towards patterning of arrays of single molecules.
- Methodologies based upon near-field photolithography offer great promise for the fabrication of functional, nanostructured assemblies of membrane proteins.