

Aerosolized-Droplet Mediated Supramolecular Assembly of Photosynthetic Pigment Analogs and Deposition onto Substrates

Scientific Achievements

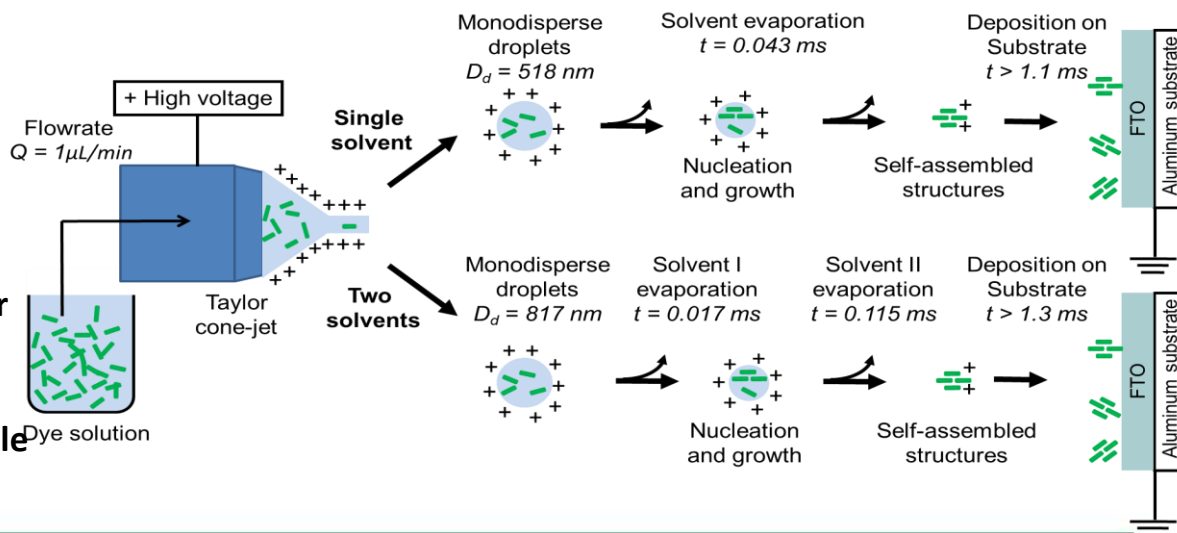
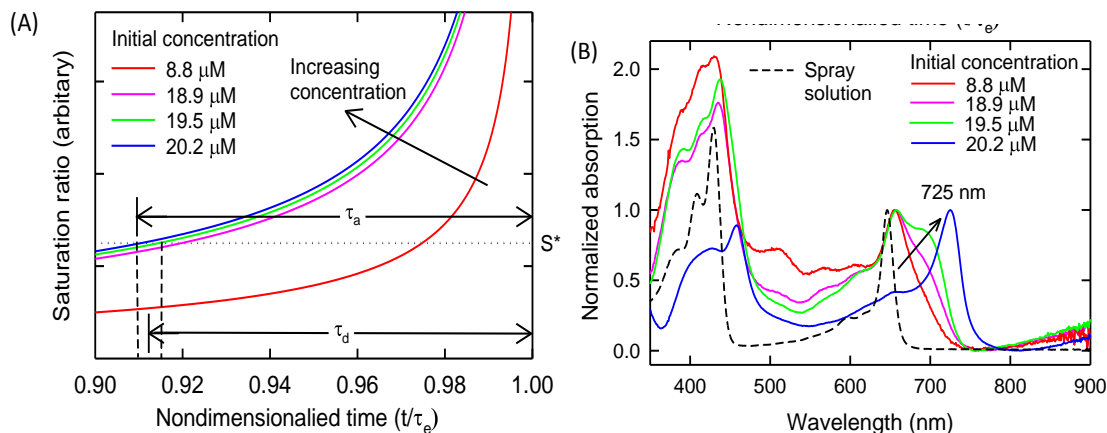
Dye molecules were assembled inside aerosolized droplets for the first time. Using a single solvent method the underlying thermodynamics based on nucleation and the kinetic limitations due to evaporation were identified. Using a combination of solvents, the kinetic limitation due to evaporation can be eliminated and control over the size of assembled structures can be exercised.

Significance and Impact

Using these techniques dual layer assemblies can be deposited to mimic the functioning of chlorosomes and increase the absorption of incident sun light.

Research Details

- Bacteria Chlorophyll c analogs were dissolved in a single solvent or two solvents
- The solvents were selected based on their volatility and solubility of dye
- The solution was electrosprayed and deposits were characterized by the UV-visible spectrometry for assembly



Shah and Biswas, to be submitted.
Work was done in collaboration with Prof. Holten and Prof. Lindsey