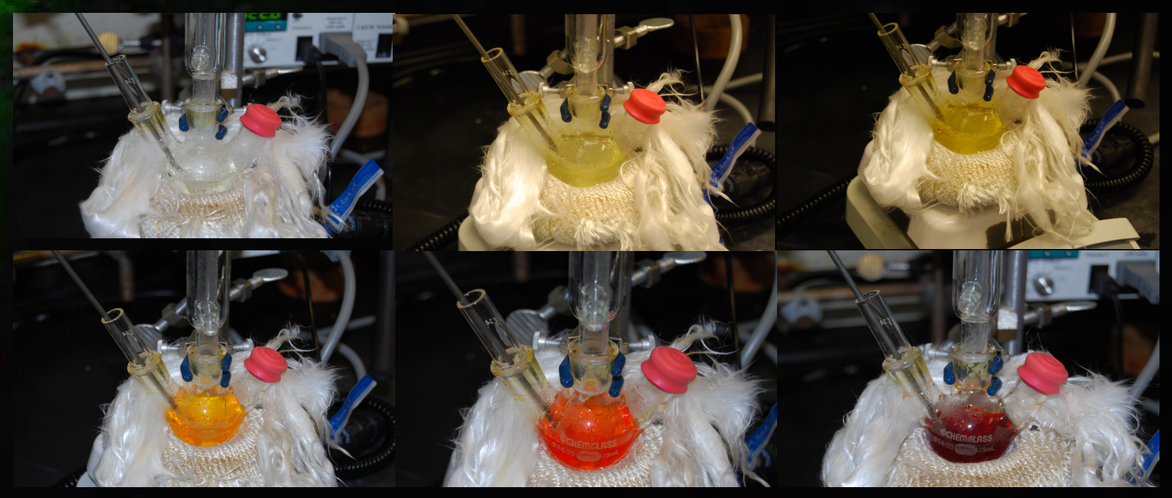
Treated Indium phosphide quantum dots excited by a 405 nm laser exhibiting color tunable emission



As a quantum dot reaction progresses, the particles grow larger and are able to absorb more visible light due to the quantum confimement effect.

Ben Glassy uses an inert atmosphere glove box which eliminates water and oxygen from chemical reactions.

Colloidal Chemistry of Metal Phosphide Semiconductor Inks: From Lighting to Solar Applications

Through chemistry we can control the light output from our cadmium-free quantum dots (QDs) to develop more energy efficient and less toxic lighting and display technology.
Products such as the Kindle Fire and Sony Triluminos Display use this technology to create a more vivid color display for the user, reduce the amount of energy needed to project images on devices, and reduce the use of heavy metals in consumer products. This same process is used to develop solar cells with similar electronic structure utilizing earth abundant materials.

Like milk, QDs are colloidal suspensions. To purify QDs, chemists can take advantage of solubility to destabilize the colloidal suspension leading to sedimentation of the particles while leaving excess starting material in solution. Our lab specializes in synthetic inorganic chemistry to safely synthesize nanomaterials that could be useful for clean energy. We use a wide range of air-free techniques to ensure high quality particles are reproducibly formed.

Images courtesy of Ben Glassy and Cossairt Lab

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