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[Session J03: CMP + Materials 6: Nanostructures](#)

8:00 AM–9:24 AM, Saturday, October 13, 2018
JFB Room: 103

Chair: Oliver Monti, University of Arizona

Abstract ID: BAPS.2018.4CS.J03.3

Abstract: J03.00003 : Characterization of Platinum Nanoparticles Utilized in Photocatalytic Hydrogen Synthesis*

8:36 AM–8:48 AM

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As energy needs grow ever greater in today's world, many scientists are investigating possible replacements for fossil fuels as an energy source. The use of hydrogen (H₂) gas in particular is undergoing a significant amount of research, but a major obstacle in the use of H₂ for green, environmentally-friendly fuel is the energetic and chemical requirement to synthesize the gas.

A possibility in satisfying current and future H₂ production needs is the use of photocatalytic

reactions, where a light-absorbing substance acts as a catalyst in shuttling electrons from a donor to protons that are reduced into H₂. Previous research conducted at BYU found such a system where platinum nanoparticles bound to ferritin catalyzed the photoreaction of methyl viologen to reduce protons in an organic acid, which offered a one hundred-fold increase in H₂ production efficiency over photocatalytic reactions catalyzed by bulk platinum.

We are reporting on our efforts to optimize the synthesis of the platinum nanoparticles bound to ferritin that are used in this photocatalytic system and how we characterize these nanoparticles.

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