

# APS March Meeting 2019

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## [Session B47: Catalytic Energy Generation](#)

11:15 AM–2:03 PM, Monday, March 4, 2019

BCEC Room: 213

Sponsoring Unit: GERA

Chair: Filip Podjaski

### **Abstract: B47.00004 : Characterization of Platinum Nanoparticles Utilized in Photocatalytic Hydrogen Synthesis\***

11:51 AM–12:03 PM

#### **Presenter:**

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Hydrogen (H<sub>2</sub>) gas is a possible alternate fuel to help meet increasing worldwide energy needs, but a major obstacle in the use of H<sub>2</sub> for green, environmentally-friendly fuel is the energetic and chemical requirements to synthesize the gas. We are studying the use of photocatalytic reactions to produce H<sub>2</sub>, where a light-absorbing substance acts as a catalyst in shuttling electrons from a donor to protons that are reduced into H<sub>2</sub>. Previous research conducted at BYU showed that platinum nanoparticles bound to ferritin catalyzed the photoreaction of methyl viologen to reduce protons in an organic acid offered an increase in hydrogen production efficiency by up to 100 times over platinum black (a commonly available platinum-based catalyst). 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, as well as how these characteristics affect H<sub>2</sub> production.

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