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Abstract for an Invited Paper
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Photoexcitations in embedded semiconducting nanoparticles

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We will discuss technical challenges involved in describing photo-excitation processes from first principles, in realistic materials [1], and we will present some results obtained using density functional and many body perturbation theory for semiconducting nanoparticles embedded in complex solid matrices, and for nanoparticles [2] with unusual core structures [3]. These are systems with promising properties for solar energy conversion.

[1] Yuan Ping, Dario Rocca, and Giulia Galli, *Chem. Soc. Rev.* **42**, 2437 (2013).

[2] Stefan Wippermann, Márton Vörös, Dario Rocca, Adam Gali, Gergely Zimanyi and Giulia Galli *Phys. Rev. Lett.* **110**, 046804 (2013).

[3] Stefan Wippermann, Marton Voros, Adam Gali, Francois Gygi, Gergely T. Zimanyi, and Giulia Galli 2013 (submitted for publication).