Tuesday, February 14, 2017, 12:30 pm in Seaver Science Library, Room 150

SSC Auditorium next to the library

Dr. Alan Sellinger

Professor at the Department of Chemistry and Materials Science Program at Colorado School of Mines & Senior Scientist at the National Renewable Energy Laboratory (NREL)

Conjugated Ligands for Tuning Bandgaps and Work-Functions of Hybrid Quantum Dots and Oxide Electrodes

Abstract:

This presentation will describe the synthesis and characterization of aromatic acid and silane based surface ligands that can significantly tune the optoelectronic properties of inorganic quantum dots and work-functions of common oxide electrodes. For example, we have recently demonstrated that computationally designed and synthetically prepared electron rich or poor aromatic ligands, when attached to 2-5nm diameter SiQD surfaces using vinylsilyl linkages, can lower the resultant materials bandgap and potentially increase the charge transport properties. Furthermore we have prepared conjugated aromatic acids with a wide range of dipole moments that have been used as ligands for tuning the absorption of PbS-QDs as well as the work-function of ZnO, ITO, and NiO_x oxide electrodes by 2eV, a magnitude of which has not been reported to date.

The scientific community is invited to attend.

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