

Spotlights on Recent JACS Publications

■ PREDICTING DNA RADIATION DAMAGE RATES WITH SPECTROSCOPY AND THEORY

Ionizing radiation can induce oxidative damage to DNA, including double-strand breaks, which can lead to mutations

and possibly can indicate indicators of this information, including five nucleobases. These properties have not considered as a habitat.

Now Petr Slavicek, E. Bradford, and redox potentials experimental—(DOI: 10.1021/ja508149e). The to measure the components, in nucleosides, pen use quantum chemion energies to these two data accurate redox environment, val damage to DNA radiation.

Deirdre Lockwood

■ ALIOVALENT DOPING IN ITO NANOCRYSTALS LEADS TO BIG SHIFTS

Semiconductor resonance properties technologies such as sensing and imaging. However, while scientists have explored gold and silver nanocrystals, plasmonic oxide nanocrystals have received less attention. The latter constructs have useful properties as well, such as a resonance band in the infrared, and easily tunable bands, which chemists can access by changing the density of doped ions in the lattice.

Here, Daniel Gamelin, Delia Milliron, and co-workers examine two different types of doping in indium tin oxide nanocrystals (DOI: 10.1021/ja5116953). The first involves aliovalent substitution, where the researchers swap out Sn⁴⁺ for In³⁺. They also examine photochemical doping, where they can control the number of electrons they add to the nanocrystals.

The researchers find that the number of electrons they can add to the nanocrystals photochemically is independent of the number of electrons already present from the Sn⁴⁺ doping. This observation suggests that the extra electrons are stabilized by the dopant ions, and that aliovalent doping does not appreciably alter the energy of the electrons in the crystal.

The authors conclude that adding impurities to the nanocrystal has significant effects, and these findings may lead to more efficient sensors and imaging technologies in the future.

Leigh Krietsch Boerner, Ph.D.

■ NEW HYDROGEN STORAGE MATERIAL CAN TAKE THE HEAT

Hydrogen gas is touted as a possible clean alternative energy source. But without a way to store the gas safely, hydrogen fuel

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development of biomimetic materials for bioengineering or medical applications.

Erika Gebel Berg, Ph.D.

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