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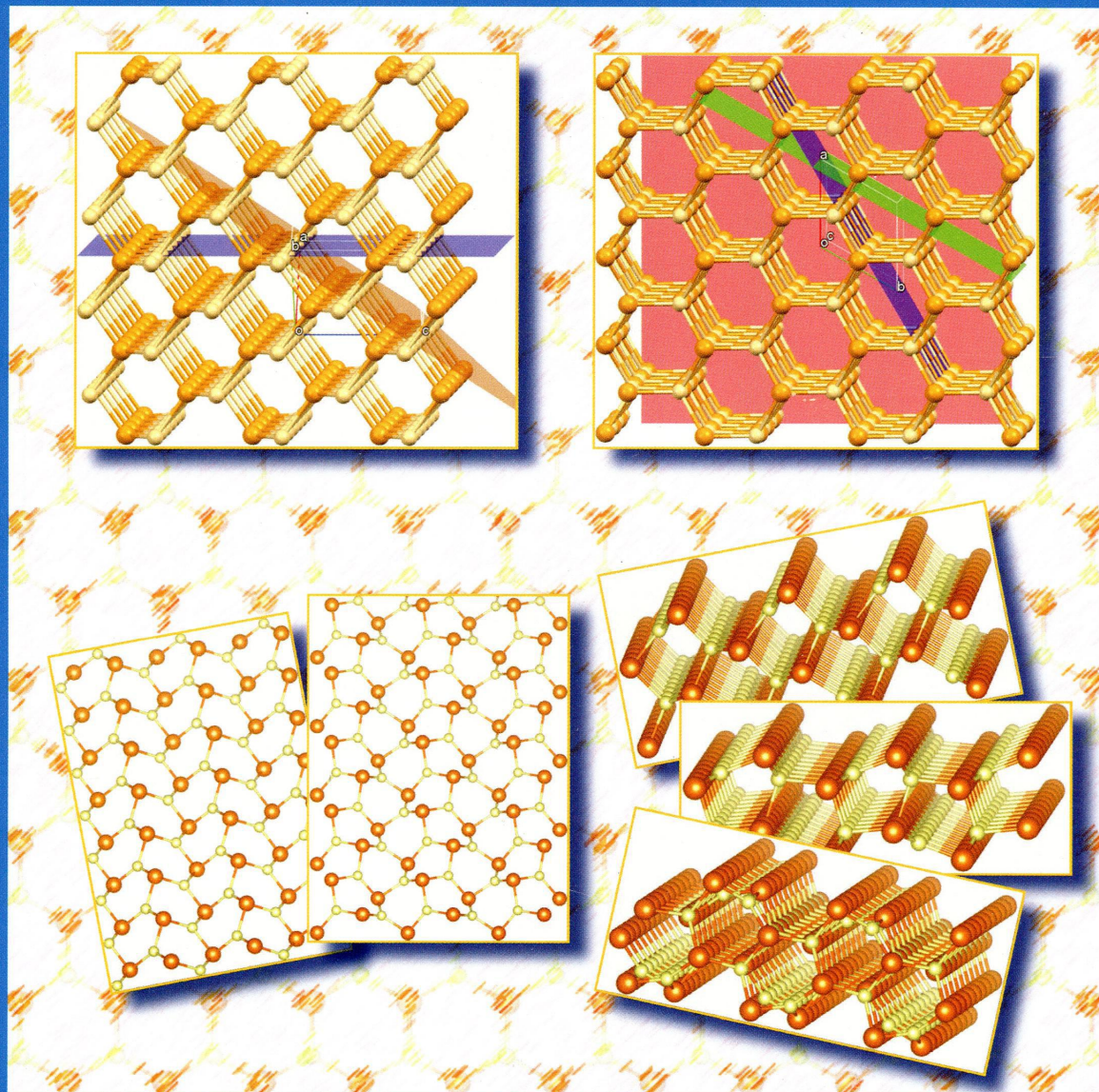
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Freestanding
Honeycomb Sheets
of II–VI Cadmium
Chalcogenides
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ENERGY CONVERSION AND STORAGE, OPTICAL AND ELECTRONIC DEVICES,
INTERFACES, NANOMATERIALS, AND HARD MATTER



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ON THE COVER: Freestanding honeycomb sheets of II–VI cadmium chalcogenides. Two-dimensional (2D) nanocrystals of CdX (X = S, Se, Te) typically grown by colloidal synthesis are coated with organic ligands (or surfactants). In light of the fact that various 2D lamellar inorganic–organic hybrid structures $[\text{Cd}_n\text{X}_m(\text{L})_m]$ (where X = S, Se, or Te; L = alkylamine ligand; $n = 1-3$; and $m = 0.5$ or 1 depending on L) have been made experimentally, we envision that the novel, freestanding 2D layered sheets of CdX will be made soon by exfoliating lamellar hybrid intermediates followed by removing the alkylamine ligands with heating. In this study, we present comprehensive and systematic theoretical predictions of the geometric structures, energetics, and electronic properties of freestanding 2D layered sheets of CdX, all possessing pseudo honeycomb lattices. Surprisingly, given the same geometrical connectivity, these 2D honeycomb sheets adopt various surface corrugations, which are accompanied by different energies and electronic properties. These newly predicted 2D layered materials provide tunable and diverse band gaps, complementary to their bulk phases, and thus offer a novel set of 2D layered materials valuable for a wealth of applications such as photovoltaic and solar water splitting. See page 16236.

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Jing Zhang, Jason Tolentino, E. Ryan Smith, Jianbing Zhang, Matthew C. Beard, Arthur J. Nozik, Matt Law, and Justin C. Johnson*

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Theoretical Predictions of Freestanding Honeycomb Sheets of Cadmium Chalcogenides

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Off-Stoichiometric Nickel Cobaltite Nanoparticles: Thermal Stability, Magnetization, and Neutron Diffraction Studies

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Exploring Ultrafast Electronic Processes of Quasi-Type II Nanocrystals by Two-Dimensional Electronic Spectroscopy

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Ultrasmall α -Fe₂O₃ Superparamagnetic Nanoparticles with High Magnetization Prepared by Template-Assisted Combustion Process

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Mechanism of the pH-Controlled Self-Assembly of Nanofibers from Peptide Amphiphiles

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In Situ Triggering and Dynamically Tracking the Phase Transition in Vanadium Dioxide

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Resonance Energy Transfer in Hybrid Devices in the Presence of a Surface

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Sorption Isotherms of Water in Nanopores: Relationship Between Hydrophobicity, Adsorption Pressure, and Hysteresis

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Additions and Corrections

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Correction to "A Density Functional Theory Study of Cytosine on Au(111)"

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