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Easy Route To Conductive Nanosheets

Simple synthesis yields highly conductive nanosheets of tungsten diselenide, which is useful in many high-tech applications

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The class of materials called metal dichalcogenides—which includes compounds such as MoS_2, WSe_2, and TaS_2—finds use in numerous high-tech applications. Examples include transistors, capacitors, batteries, catalysts, and hydrogen storage materials. Nanostructured versions of these compounds can be more stable chemically and exhibit better electronic properties than their bulk counterparts. They might find even broader applications if they weren't typically prepared via laborious methods such as sputtering, chemical vapor deposition, and electrodeposition. University of Southern California chemists may have come up with an attractive solution.

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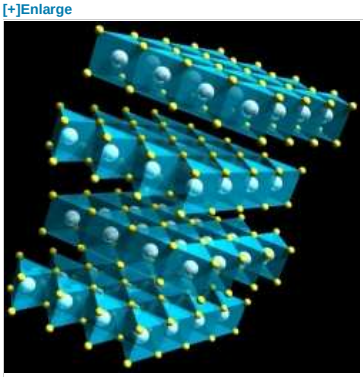

A simple solution-phase method yields high-quality nanosheets of WSe2 (W is white; Se is yellow)
Credit: *Chem. Mater.*

Priscilla D. Antunez, David H. Webber, and Richard L. Brutchey have demonstrated a simple solution-phase method to prepare highly conductive WSe_2 nanosheets (*Chem. Mater.* 2013, DOI: 10.1021/cm400790z). The team reacted di-*tert*-butyl diselenide with WCl_4 in dodecylamine and treated the product with a surfactant to prevent the crystallites from agglomerating. The group reports that the high-yield method produces "phase pure" samples that exhibit conductivity values typical of samples prepared by painstaking methods.

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