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**Electrical Properties of Metallic and Semiconducting Transition-Metal Dichalcogenide Nanopatches.** ENRIQUE COBAS, ANTHONY AYARI, OLOLADE OGUNDADEGBE, MICHAEL FUHRER, Department of Physics, Center for Superconductivity Research, and Materials Research Science and Engineering Center, University of Maryland — Metallic and semiconducting nanopatches of $MoS_2$, $TaS_2$ and $WSe_2$ dichalcogenide crystals on $SiO_2$ substrates were fabricated. The crystals were synthesized by a chemical vapor transport method or obtained in natural form and cleaved by mechanical or chemical exfoliation techniques to thicknesses as small as 2nm. Electrical contact to the nanopatches was established via lithographically defined metal leads to allow measurement of electrical properties, including charge carrier mobility and Hall mobility, in field-effect transistor geometries at various temperatures. These nanopatches represent progress toward studies of electron behavior in self-assembled two-dimensional systems.

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