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Transport Properties of CVD Grown TMDs on Flat and Patterned Substrates JOSEPH MARTINEZ, ARIANA NGUYEN, University of California Riverside, THOMAS SCOTT, University of Nebraska-Lincoln, EDWIN PRECIADO, VELVETH KLEE, University of California Riverside, DEZHENG SUN, Columbia University, PANKAJ SHARMA, University of Nebraska-Lincoln, I-HSI LU, DAVID BARROSO, University of California Riverside, SUKHYUN KIM, Columbia University, V. YA. SHUR, Ural Federal University, ALEXEI GRUVERMAN, PETER A. DOWBEN, University of Nebraska-Lincoln, LUDWIG BARTELS, University of California Riverside — Transition Metal Dichalcogenides (TMDs), MX2 (M=Mo, W, etc., X=S, Se, Te), have shown great promise for applications as electronic, spintronic and photonic materials. We show growth of MX2 materials under UHV (ultrahigh vacuum) and via CVD (chemical vapor deposition) on both flat and patterned substrates. Deposition on periodically-poled ferroelectric substrates reveals the impact of poling domains and the ability to reversibly invert the transport characteristics from n- to p-doped. 3D geometric patterning of substrates permits the growth across trenches and at angles to the substrate plane leading to modifications of the commonly-addressed in-plane transport properties.

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