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Strain Engineering of Transition Metal Dichalcogenides ALI DADGAR, ABHAY PASUPATHY, IRVING HERMAN, DENNIS WANG, Columbia University, KYUNGNAM KANG, EUI-HYEOK YANG, Stevens Institute of Technology — The application of strain to materials can cause changes to bandwidth, effective masses, degeneracies and even structural phases. In the case of the transition metal dichalcogenide (TMD) semiconductors, small strain (around 1 percent) is expected to change band gaps and mobilities, while larger strains are expected to cause phase changes from the triangular 2H phase to orthorhombic 1T' phases. We will describe experimental techniques to apply small and large (around 10 percent) strains to one or few layer samples of the TMD semiconductors, and describe the effect of the strain using optical (Raman, photoluminescence) and cryogenic transport techniques.

Abdollah Dadgar
Columbia University

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