Atomically Thin Semiconductor, Transition Metal Dichalcogenides Growth and Its Nonlinear Optical Characteristics

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Graphene, a single atomic layer of carbon atoms, has attracted grated attention because of its novel physical properties and potential for electro-optical technology. Recently this interest has expanded to the wide class of two-dimensional materials that occur naturally as 2D layers of van-der-Waals crystals. While preserving graphene's flexibility and tenability by external perturbations, atomically thin layers of this broader set of materials provide access to more varied electronic and optical properties, including semiconductor and insulating behavior.

In this presentation, we will discuss some distinctive properties and large area continuous growth of atomically thin 2D semiconductor, especially transition metal dichalcogenide (MX_2 where M=Mo, W and X = Se, S). We also demonstrated monolayer $Mo(S,Se)_2$ is next generation nonlinear optical material for its strong optical nonlinear properties with second harmonic generation characteristics

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