

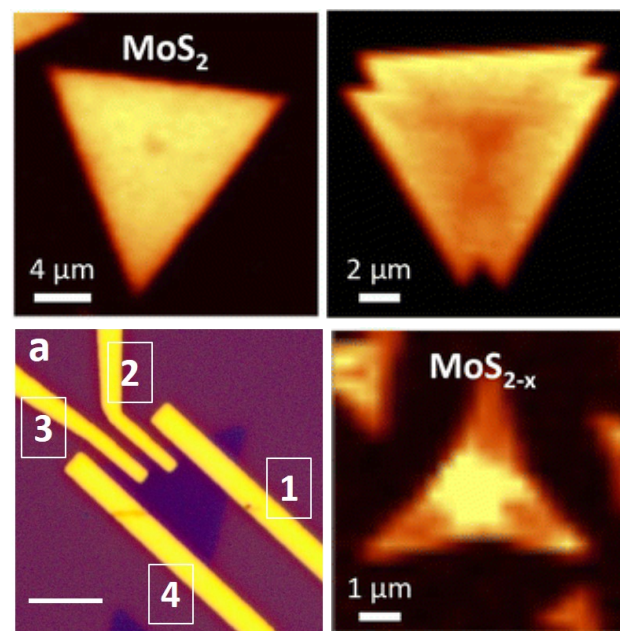
Influence of Stoichiometry on the Optical and Electrical Properties of Chemical Vapor Deposition Derived MoS₂

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Ultrathin transition metal dichalcogenides (TMDCs) of Mo and W show great potential for digital electronics and novel optoelectronic applications, but the influence of stoichiometry on the electrical and optical properties has been largely overlooked. The stoichiometry of monolayer CVD-grown MoS₂ was systematically varied and correlated with the associated changes in optical and electrical properties. Surprisingly, the characteristics of transistor devices were *improved* by utilizing more defective (less stoichiometric) material.



The morphology of monolayer MoS₂ crystals evolves with sulfur content. Microelectrodes are used to probe properties of single “flakes”.

