## Interactions of oxygen with MoS<sub>2</sub> crystals

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For numerous applications of microscopic MoS<sub>2</sub> crystals, particularly in flexible nanoelectronics, one must understand their oxidation reactions in air and water. In this talk, I will present the studies of microscopic heat induced oxidation and oxidative etching in the case of thick, mechanically exfoliated, geological 2H MoS<sub>2</sub> crystals in air. I will discuss particular reaction mechanisms and show how to differentiate MoO<sub>3</sub> oxides and their derivatives onto such surfaces. In order to do so, we combined global and local XPS, AES, XAS, Raman and AFM (topography, friction, Kelvin Probe) measurements on single microscopic MoS<sub>2</sub> flakes [1-4].

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**FIGURE 1.** Phenomenological aspects of the MoO<sub>x</sub> formation onto MoS<sub>2</sub> basal planes during their heating in dry air.

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