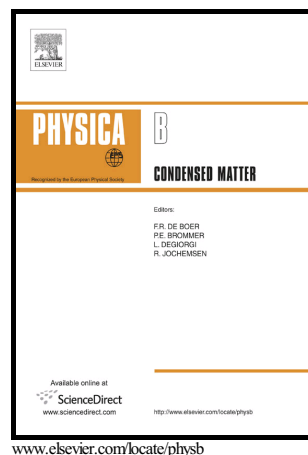


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# Salt-Assisted Clean Transfer of Continuous Monolayer MoS<sub>2</sub> Film for Hydrogen Evolution Reaction

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## Abstract

The transfer of two-dimensional (2D) materials from one substrate to another is challenging but of great importance for technological applications. Here, we propose a facile etching and residue-free method for transferring a large-area monolayer MoS<sub>2</sub> film continuously grown on a SiO<sub>2</sub>/Si by chemical vapor deposition. Prior to synthesis, the substrate is dropped with water-soluble perylene-3, 4, 9, 10-tetracarboxylic acid tetrapotassium salt (PTAS). The as-grown MoS<sub>2</sub> on the substrate is simply dipped in water to quickly dissolve PTAS to yield the MoS<sub>2</sub> film floating on the water surface, which is subsequently transferred to the desired substrate. The morphological, optical and X-ray photoelectron spectroscopic results show that our method is useful for fast and clean transfer of the MoS<sub>2</sub> film. Specially, we demonstrate that monolayer MoS<sub>2</sub> film transferred onto a conducting substrate leads to excellent performance for hydrogen evolution reaction with low overpotential (0.29 V vs the reversible hydrogen electrode) and Tafel

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