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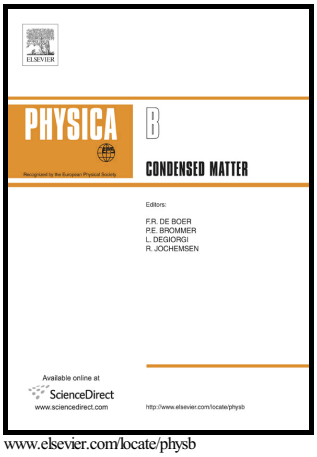


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# Salt-Assisted Clean Transfer of Continuous Monolayer $MoS_2$ Film for Hydrogen Evolution Reaction

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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 $MoS_2$ film continuously grown on a $SiO_2$/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 $MoS_2$ on the substrate is simply dipped in water to quickly dissolve PTAS to yield the $MoS_2$ 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 $MoS_2$ film. Specially, we demonstrate that monolayer $MoS_2$ 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