

Photoconductivity of bulk and liquid processed MoS₂

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Molybdenum Disulfide, a transition metal dichalcogenide has been the focus of innumerable publications¹⁻³ recently mainly due to the success of graphene^{4,5} and the increase interest on other 2D materials, proving that dimensionality plays a significant role on the materials properties. Besides, the absence of a bandgap in graphene makes MoS₂ particularly interesting as it is an abundant and natural occurring n-type semiconductor.

Back in the 70's Tributsch was the pioneer to exploit MoS₂ electrodes for solar cells applications^{6,7} but back then the technology to achieve thin layers of the material was not as evolved as it is to date⁸⁻¹⁰. Nevertheless, limitations of scalability due to expensive or low yield manufacturing methods justify the focus of the present study.

In the photoconductivity experiments we measured thickness and wavelength dependency of the material. Light sources were a halogen lamp together with a monochromator. Two types of samples were tested: MoS₂ deposited on glass or pressed into pills both with gold contacting electrodes. Both these methods are scalable. Results show that molybdenum disulfide is photoconducting.

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