

What will stop the exfoliation of MoS₂

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The liquid-phase exfoliation (LPE) is a technique with the potential for large scale production of 2D materials [1]. One of the promising 2D materials for applications in electronics, sensors, Li-ion batteries, and others is MoS₂ [2]. In our contribution, we will present a limitation of the conventional LPE process. The oxidation depends on the initial concentration of MoS₂ powder and the type of solution, in which the powder is dispersed. If the initial concentration of the MoS₂ powder exceeds the critical value of approximately 12 mg/ml, the oxidation of MoS₂ towards MoO_x nanoparticles occurs (Figure 1). In our presentation, we will discuss the fundamental limitation of the LPE process and analyze the generated MoO_x nanoparticles.

Acknowledgments

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References

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- [2] Gupta, A., Sakthivel, T. & Seal, S. Recent development in 2D materials beyond graphene. *Prog. Mater. Sci.* 73, 44–126 (2015).

Figures



Figure 1. The MoO_x nanoparticles produced from 60 mg/ml of MoS₂ in (from left) NMP, water, 45% ethanol in water.