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MoS_2 mechanical resonators, a promising platform for defect-based optomechanics

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Abstract

Transition metal dichalcogenides, such as MoS_2, are of great interest, as they can host precisely positioned and scalable single photon sources. We aim to couple the mechanical motion of MoS_2 suspended membranes to single photon sources implanted inside them.

In this work we study the mechanical and optical properties of such suspended membranes. Furthermore, the mapping of the photoluminescence shows indications of a pressure-induced exciton trap. Understanding of the mechanical properties of suspended MoS_2 membranes will enable us to explore the effects of atomic defect implantation on the membranes as well as future defect-based optomechanics.