

GDR HOWDI 2022 MEETING:

Exciton-phonon coupling and optical properties in hexagonal-BN

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Hexagonal boron nitride is an indirect band gap material with a strong luminescence intensity in the ultraviolet. This luminescence originates from bound excitons recombination assisted by different phonon modes[1,2]. The coupling between excitons and phonons is so strong that the resulting light emission is as efficient as the one of direct band gap materials[3]. In this talk I discuss different theoretical approaches to calculate exciton-phonon coupling and phonon-assisted luminescence[1,2]. Then I'll show how external strain[4], pressure[5] and the presence of a substrate[6] modify the coupling between excitons and phonons and the corresponding absorption/luminescence spectra.

References

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- [5] A. Segura et al. *J. Phys. Chem. C* , **125**(23), 12880(2021)
- [6] P. Lechiffart, F. Paleari, D. Varsano, C. Attacalite “*Luminescence from an hexagonal boron nitride monolayer: exciton-phonon coupling and the role of substrate*” in preparation

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