



GDR-HOWDI
LAVOISIER DISCUSSION SERIES

QUANTUM EMITTERS IN 2D

There is a great diversity of quantum emitters in solid state. The wavelength and rate of emission, the degree of photon indistinguishability, in situ control and the existence of a spin-photon interface strongly vary from one system to another with specific properties inherited from the host material and its dimensionality. Recent research in 2D materials has shown fascinating emerging phenomena (moiré, ultra-strong light-matter coupling, topological effects, ...) that may impact the development of quantum emitters in 2D systems.

This Lavoisier discussion aims at discussing the state of the art on quantum emitters in 2D layered materials (TMDCs, h-BN ...), and at comparing with other classes of single photon sources embedded in 1D (carbon-nanotubes) and 3D matrices (III-V quantum dots, color centers in diamond, silicon, SiC...). Special emphasis will be paid to the fundamental properties of the quantum emitters, their integration in nanophotonic devices, and their potential for quantum technologies.