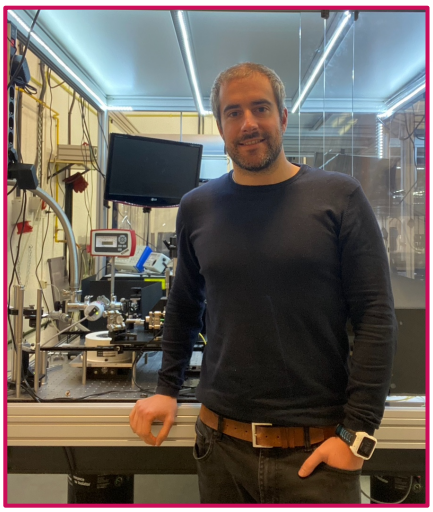
12:00
15th February 2022

Sala de Grados
Facultad de Ciencias

INMA Impulso



Two-dimensional materials for nonlinear and quantum photonics

Dr. Carlos Antón-Solanas
Universidad Autónoma de Madrid

Atomically thin crystals of transition metal dichalcogenides (TMDCs) have emerged as a new platform to study tightly bound excitons and many-body excitations. Their big dipole coupling to light allows to study light-matter interactions in photonic cavities, with interactions ranging from weak to strong coupling conditions.

In the weak coupling regime, we have recently demonstrated a record brightness in single-photon emission from single excitons trapped in WSe_2 monolayers, coupled to a Fabry-Pérot-like cavity. In the strong coupling regime, we have demonstrated the bosonic condensation of exciton-polaritons in $MoSe_2$ monolayers at cold temperatures, and the emergence of polariton coherence in WSe_2 monolayers at room temperature, constituting ultimately thin devices for laser light emission. Future experiments will explore the unique spin properties of TMDCs coupled to topological photonic cavities, which will open new applications in optoelectronic devices.

INMA INSTITUTO DE NANOCIENCIA Y MATERIALES DE ARAGÓN

CSIC Consejo Superior de Investigaciones Científicas

Universidad Zaragoza 1542