



FLEET

ARC CENTRE OF EXCELLENCE IN
FUTURE LOW-ENERGY
ELECTRONICS TECHNOLOGIES

RESEARCH SEMINAR

All-dielectric nanophotonics with transition metal dichalcogenide semiconductors

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Abstract: In this seminar, Luca will show how coupling TMDC monolayers of WSe_2 with Mie resonances in dielectric nano-antennas allows the nanoscale positioning and quantum efficiency enhancement of native strain-induced single-photon emitters and will introduce how nanophotonic structures, made exclusively of vdW materials, open to a plethora of possibilities for tailoring light-matter interaction of integrated quantum light sources.

High-refractive index dielectrics have emerged as an exciting nanophotonic platform to shape and control electromagnetic fields at the nanoscale, offering a toolbox for tailoring light-matter interaction of solid-state quantum emitters via optical Mie resonances in sub-wavelength nanoantennas.

Van der Waals (vdW) materials, such as the family of Transition Metal Dichalcogenides (TMDCs), are a powerful system for investigating light-

matter interaction at the nanoscale, exhibiting exceptional optical properties in their atomically-thin, monolayer form, with tightly bound excitons, light-valley interactions, and single-photon emitters.

About the Speaker: Luca Sortino obtained his PhD in early 2020 at the University of Sheffield, as part of the Marie Skłodowska Curie International Training Network "Spin-NANO". After a postdoctoral experience at the hybrid plasmonic groups at Ludwig-Maximilians-University (LMU) Munich he obtained a Humboldt Postdoctoral Research Fellowship in 2022 in the same group.

His research interest lies between solid-state physics and nanophotonics, with a focus on 2D materials, and with expertise in experimental optics and time-resolved, ultrafast spectroscopy.

DATE: Tuesday 21 Jun 2022
TIME: 11:00AM - 12:00PM
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