ICFO



# INSIGHT SEMINAR: Two recent nano-optics experiments with vdW materials & heterostructures

DMITRI N. BASOV

February 20, 2025
12:00 to 13:00
Elements Room

**ABSTRACT:**
I am thrilled to have this opportunity to speak at ICFO and to present our recent work on nano-spectroscopy and nano-imaging of van der Waals (vdW) materials/structures! I am particularly excited with two recent results: 1) Good plasmons in a bad metal: MoOCl2 is the latest addition to hyperbolic vdW materials with non-trivial electrodynamics spanning a broad range of frequencies from mid-IR to visible / Frank Ruta et al. Science February 14, 2025/; 2) vdW waveguide quantum electrodynamics: we observed notable Purcell enhancement of the spontaneous emission produced by MoTe2 monolayers integrated in WSe2 waveguides /Sam Moore et al. in the 2-nd revision/.

**BIO:**

Dmitri N. Basov (PhD 1991) is a Higgins professor and Chair of the Department of Physics at Columbia University [http://infrared.cni.columbia.edu], the Director of the DOE Energy Frontiers Research Center on Programmable Quantum Materials [since 2018] and co-director of Max Planck Society - New York Center for Nonequilibrium Quantum Phenomena [2018-2030]. He has served as a professor (1997-2016) and Chair (2010-2015) of Physics, University of California San Diego. Research interests include: physics of quantum materials, superconductivity, two-dimensional materials, infrared nano-optics. Prizes and recognitions: Sloan Fellowship (1999), Genzel Prize (2014), Humboldt research award (2009), Frank Isakson Prize, American Physical Society (2012), Moore Investigator (2014, 2020), K.J. Button Prize (2019), Vannevar Bush Faculty Fellowship (U.S. Department of Defense, 2019), National Academy of Sciences (2020).

**Hosted by:** Prof. Dr. Javier Garcia de Abajo