



Date & Time: **Thursday, June 25th 2026 at 10:30am**

Location: **MPSD 900.EG.136**

Speaker: **Alexandra Boltasseva**

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qcmd - Seminar



The recent advent of tailorable photonic materials such as plasmonic ceramics including transition metal nitrides (TMNs), MXenes, Weyl semimetals and transparent conducting oxides (TCOs) is currently driving the development of new concepts and devices for IT, communication, sustainable energy and quantum technologies. In addition to great tailorability of their optical properties, strong plasmonic behavior, optical nonlinearities, these materials offer pathways to uncovering new optical and quantum phenomena ranging from epsilon-near-zero behavior to transdimensional photonics and strongly correlated systems. In this talk, we explore novel applications of TMNs (titanium nitride, zirconium nitride) and TCOs for flat optics, all-optical switching, high-harmonic-based XUV generation as well as for demonstrating new physical effects in atomically thin, transdimensional plasmonic films related to strong light confinement and metal-to-insulator transition. Our work paves the way to novel phenomena and device design with ultrafast tunable and tailorable optical materials.