

Soft.Matter@PT 2015

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Expertise: Interfaces and wetting of simple fluids and liquid crystals

	Colloids	Liquid Crystals	Polymers and Gels	Interfaces, surfactants	Foams, emulsions	Granular materials	Biological	Lanthanide ions	Organic-inorganic hybrids
Experimental			✓					✓	✓
Computacional									
Theoretical								✓	✓

Description of expertise:

Optoelectronic properties of organic/inorganic hybrids without metal activator centres and doped with lanthanide ions, nanoparticles of semiconductor and oxide materials.

Optical (photoluminescence in steady-state, time resolved modes, and quantum yield, as well as UV/Vis/NIR spectroscopy) and structural (XRD, SAXS, NMR, Raman, and Fourier-transform infrared spectroscopies) characterization of hybrid materials.

Characterization of waveguiding performance of organic-inorganic hybrids and on spectroscopic ellipsometry, including optimization of modelling algorithms.

Applications in the fields of optoelectronics and photonics (phosphors, solid-state lighting, and integrated optics) and photovoltaics (luminescent solar concentrators).

Selected Publications (max 5):

- *Luminescent solar concentrators. Sol. Energ. Mat. Sol. Cells. 138, 51 (2015).*
- *Single-phase white LEDs. Nat. Commun. 5, 5702 (2014).*
- *Photonic-on-a-chip. Laser Photonics Rev. 7, 1027 (2013).*
- *Organic–inorganic hybrid phosphors. Chem. Soc. Rev. 40, 536 (2011).*
- *Lanthanide-Containing Hybrids, Adv. Mater. 21, 509 (2009).*