Nanostructures & Optics

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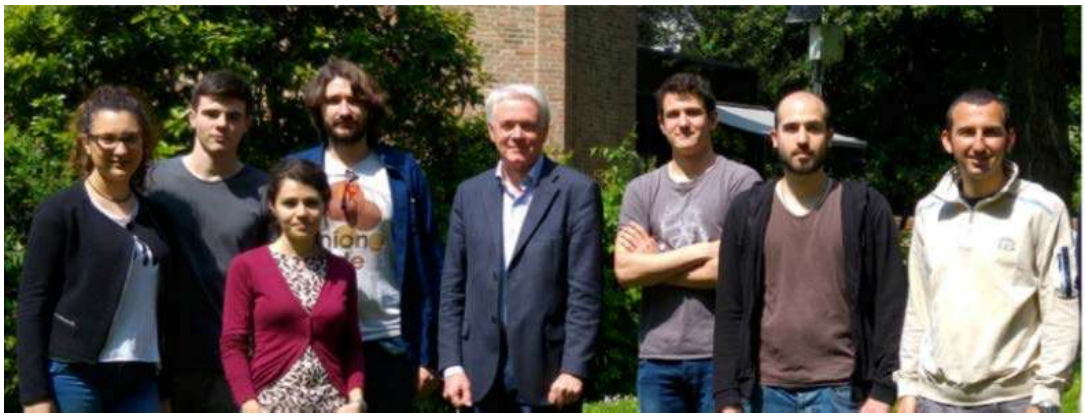

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Research activities at NOL are on the synthesis, characterization and applications of nanostructures for fields like nanobiotechnology and related fields, new materials for photovoltaic cells and in cultural heritage. All these activities are based on plasmonic and magnetoplasmonic nanostructures obtained by laser ablation of bulk materials under solvents. The plasmonic properties are exploited in particular for the SERS effect, whereas the magnetic ones for magnetophoresis. For the nanobiotechnological applications the nanostructures are functionalized with molecules (peptides and antibodies) for cell targeting and their activity is studied as a function of their organization on the nanostructure surface. SERS properties of the nanostructures are exploited in cultural heritage studies and new materials are obtained for perovskite solar cells.

- *Enhanced EGFR Targeting Activity of Plasmonic Nanostructures with Engineered GE11 Peptide,* Adv. Healthcare Mater., **2017**, 1700596 (DOI: 10.1002/adhm.201700596).
- *High-Quality, Ligands-Free, Mixed-Halide Perovskite Nanocrystals Inks for Optoelectronic Applications,* Adv. Energy Mater., **2017**, 7, 1601703 (DOI: 10.1002/aenm.201601703).
- *A new integrated TLC/MU-ATR/SERS advanced approach for the identification of trace amounts of dyes in mixtures,* Analytica Chimica Acta, **2017***,* 991, 104-112 (DOI: 10.1016/j.aca.2017.08.020).
- *Degradation-by-design: Surface modification with functional substrates that enhance the enzymatic degradation of carbon nanotubes,* Biomaterials*,* **2015**, 72, 20-28 (DOI: 10.1016/j.biomaterials.2015.08.046).
- *Perylene Derivatives As Useful SERRS Reporters, Including Multiplexing Analysis,* ACS Appl. Mater. Interfaces, **2015**, 7, 28042−28048 (DOI: 10.1021/acsami.5b03586).