**Functionalization of SINGLE WALL CARBON NANOTUBES with poly(ethylene glycol)**

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**Selectivity** of CUTTING process

The analysis of the radial breathing mode makes it possible to assign the observed bands to metallic and semiconducting SWNTs and to suggest the chiral indices. Small diameter tubes, due to the stress induced by the curvature, are first attacked and destroyed.

![CUTTING](image)

Iron nanoparticles present in pristine SWNT are removed during cutting – etching process.

**Disentanglement**

Functionalization prevents aggregation of SWNT in solution. Laser scattering shows smaller clusters, and Raman band at 1591 cm⁻¹ decreases from 13 to 11 cm⁻¹ (single SWNT: 9 cm⁻¹).

**Optical limiting**

Functionalization provides to SWNT a lower non-linear threshold and a higher damage threshold.

**Supporting on silica gel**

Soluble SWNT derivatives have been adsorbed on the surface of spherical particles of silica gel (d = 100 - 5000 nm) for the realization of HPLC stationary phases.

Collaboration with Claudio Villani (University of Roma “La Sapienza”).

**Embedding in polymer films**

sh-SWNT-PEG have been embedded in polymethylmethacrylate films (thanks are due to Gabriele Marcolongo) cast on glass cover slips, allowing photophysical studies in dispersed solid phase. In particular, pump-probe experiments with femtosecond time resolution have been performed.

Collaboration with Giuglielmo Lanzani (Politecnico di Milano).