

# Experiment Proposal

Experiment number GP2022008

<b>Principal investigator</b>	Professor Luca Tortora, Roma Tre University, ITALY
<b>Co-investigator</b>	Ms Cadia D&O39;Ottavi, University of Rome Tor Vergata, ITALY
<b>Co-investigator</b>	Dr Laura Fazi, University of Rome Tor Vergata, ITALY
<b>Co-investigator (*)</b>	Professor Silvia Licocchia, University of Rome Tor Vergata, ITALY
<b>Co-investigator</b>	Professor Pietro Morales, University of Rome Tor Vergata, ITALY
<b>Co-investigator</b>	Dr Enrico Preziosi, University of Rome Tor Vergata, ITALY
<b>Co-investigator</b>	Dr Anna Prioriello, University of Rome Tor Vergata, ITALY
<b>Co-investigator</b>	Dr Giovanni Romanelli, University of Rome Tor Vergata, ITALY
<b>Co-investigator</b>	Professor Roberto Senesi, University of Rome Tor Vergata, ITALY
<b>Experiment title</b>	Morphological characterization of polymer-CNT composites for biomedical applications
<b>SRF Instrument</b>	<b>Scanning Probe Microscopes</b>
<b>Access Route</b>	Rapid Access
<b>Science Areas</b>	Biology and Bio-materials, Chemistry
<b>Sponsored Grant</b>	None
<b>Grant Title</b>	-
<b>Start Date</b>	-
<b>Similar Submission?</b>	-
<b>Industrial Links</b>	-

**Days requested:** 4  
**Previous GP Number:** -  
**DOI:** -  
**Sponsor:** -  
**Grant Number:** -  
**Finish Date:** -

<b>Non-Technical Abstract</b>	<p>The increasing interest in stretchable conductive composite materials used for wide ranging applications has sparked a growing demand for studies of scalable and widely applicable fabrication techniques and geometries. The development of stretchable sensors is of significant relevance for companies operating in the biomedical device sector since they allow constant monitoring of the patient, making him more autonomous and therefore improving his quality of life.</p> <p>We here propose a series of studies to investigate the morphology and composition of composite materials obtained by a CNT (carbon nanotubes) dispersion deposited by drop casting on different commercial polymer substrates (i.e., polyethylene, polyproline, silicone, polyisoprene natural rubber and nitrile butadiene rubber films). To understand the stability of the CNT boundless grafting on the substrate, which is paramount for application, we propose to characterize the samples through complementary use of Raman spectroscopy &amp; SEM-EDX (located at Unit-Univ Tor Vergata).</p> <p>Using scanning electron microscopy combined with energy dispersive X-ray spectroscopy and the atomic force microscopy in situ, we rely on understand the number and the depth of CNT boundless grafting in the polymer films. By morphological and the spectroscopical acquisition we would like to obtain a sharp picture of the microscopic surface structures of the sample as well as provide accurate information about its elemental composition.</p>
<b>Publications</b>	-

**Instruments**  
**Access Route**  
**Science Areas**  
**Sponsored Grant**  
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**Finish Date:**



## Sample record sheet

**Principal contact** Professor Silvia Licoccia, University of Rome Tor Vergata, ITALY  
**SRF Instrument** **Scanning Probe Microscopes** **Days Requested: 4**  
**Special requirements:**

### SAMPLE

<b>Material</b>	polymer CNT composite	-	-
<b>Formula</b>	CNT polymers (C, N, N, O)	-	-
<b>Forms</b>	Solid		
<b>Volume</b>	5-10 cc		
<b>Weight</b>	200 mg		
<b>Container or substrate</b>	-	-	-
<b>Storage Requirements</b>	-	-	-

### SAMPLE ENVIROMENT

<b>Temperature Range</b>	290 - 320 K	-	-
<b>Pressure Range</b>	1013 - 1013 mbar	-	-
<b>Magnetic field range</b>	- T	-	-
<b>Standard equipment</b>	None	-	-
<b>Special equipment</b>	-	-	-

### SAFETY

<b>Prep lab needed</b>	Yes	-	-
<b>Sample Prep Hazards</b>	-	-	-
<b>Special equip. reqs</b>	-	-	-
<b>Sensitivity to air</b>	No	-	-
<b>Sensitivity to vapour</b>	No	-	-
<b>Experiment Hazards</b>	-	-	-
<b>Equipment Hazards</b>	-	-	-
<b>Biological hazards</b>	-	-	-
<b>Radioactive Hazards</b>	-	-	-
<b>Additional Hazards</b>	-	-	-
<b>Additional Details</b>	-	-	-
<b>Sample will be</b>	Returned to user by instrument - scientist (when inactive)	-	-

