

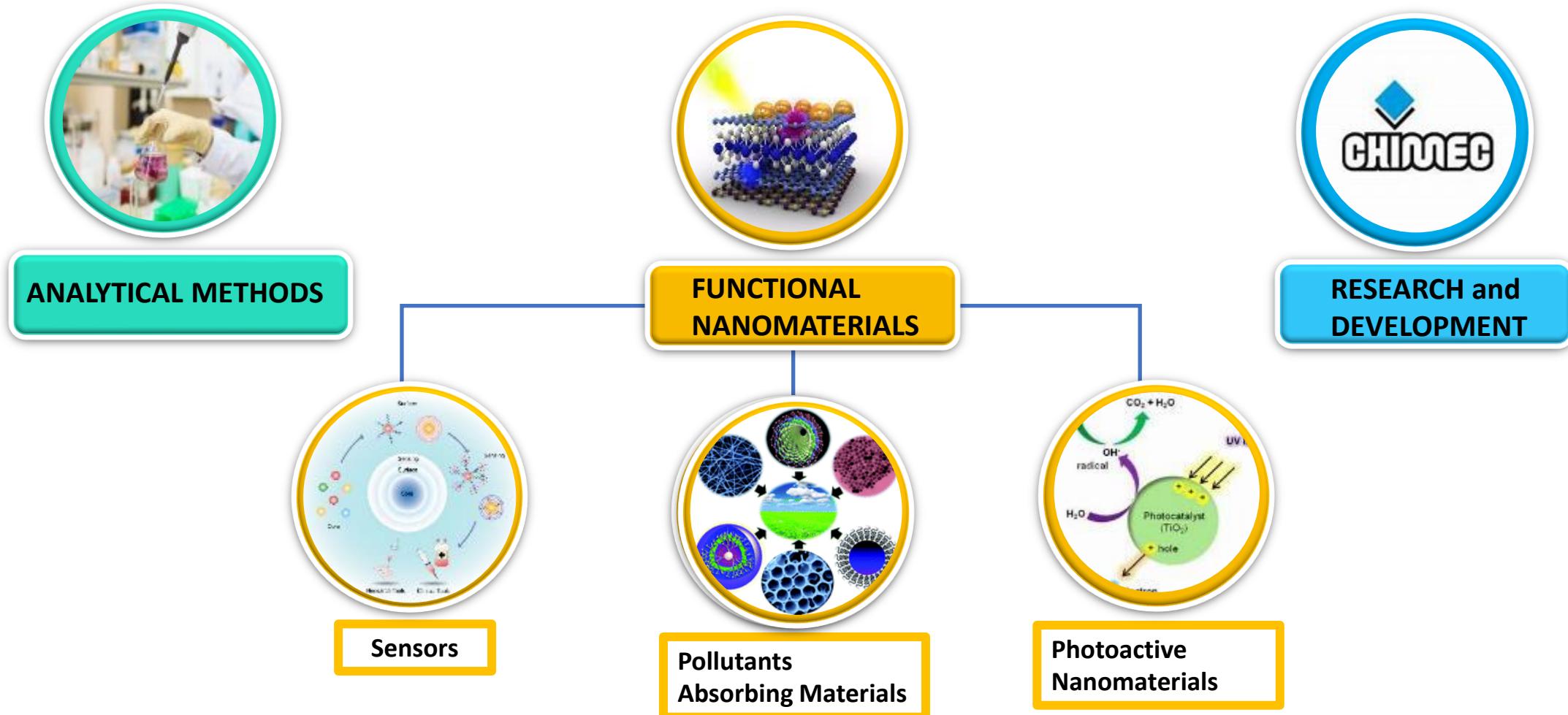
Chemistry for the Environment: from Analysis to Pollutants Elimination.

Gruppo di ricerca di Chimica Analitica Ambientale

Prof. Rita Giovannetti
Prof. Stefano Ferraro

PostDoc - Dr. Marco Zannotti
PhD student - Dr. Andrea Rossi
Borsista di Ricerca - Dr. Diego Appignanesi
Borsista di Ricerca - Dr. Valentina Loggi

Chemistry for the Environment: from Analysis to Pollutants Elimination.





ANALYTICAL METHODS

Prof. Stefano Ferraro

Mineral, Thermal water and large number of samples



**Analytical methods
for the analysis
of organic and inorganic
pollutants**

- HPLC-MS
- ICP-MS
- GC-MS



Elements Speciation

HPLC-ICP-MS

**Isotopic characterization
of Elements**

ICP-MS

Geographical origin



Applied Geochemistry
Volume 78, March 2017, Pages 23-34

Circulation path of thermal waters within the Laga foredeep basin inferred from chemical and isotopic ($\delta^{18}\text{O}$, δD , ${}^3\text{H}$, ${}^{87}\text{Sr}/{}^{86}\text{Sr}$) data.

Alessandro Fusari¹, Michael R. Carroll¹, Stefano Ferraro², Rita Giovannetti³, Geoffrey Giudetti⁴, Chiara Invernizzi²,
^{1,2} Mario Musai², Maddalena Perini⁴



Journal of Dairy Science
Volume 103, Issue 10, October 2020, Pages 8741-8749



Distribution of calcium, phosphorus, sulfur, magnesium, potassium, and sodium in major fractions of donkey milk

F. Fantauzzi¹, S. Ferraro², A. Di Stefano¹, L. Giacopelli¹, A. Fallica¹, F. Manzantoni², E. Salmeri¹



antioxidants

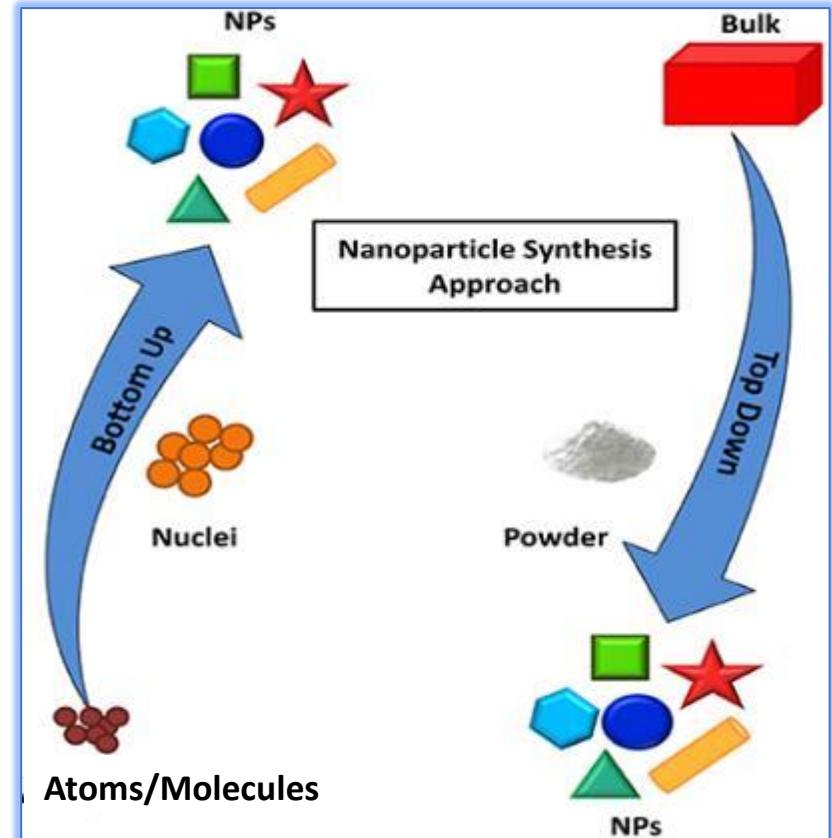
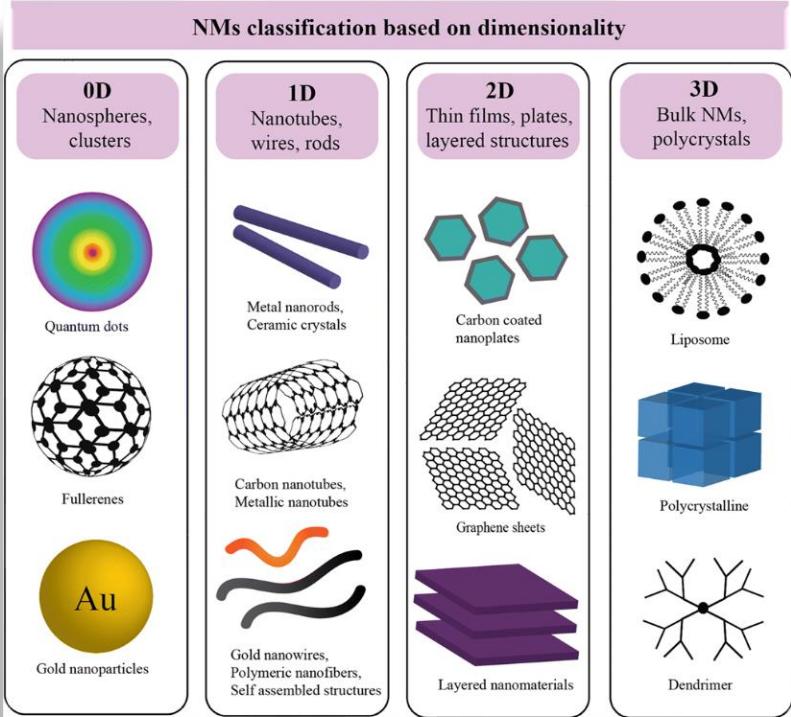


Article
Optimization of the Extraction from Spent Coffee Grounds Using the Desirability Approach

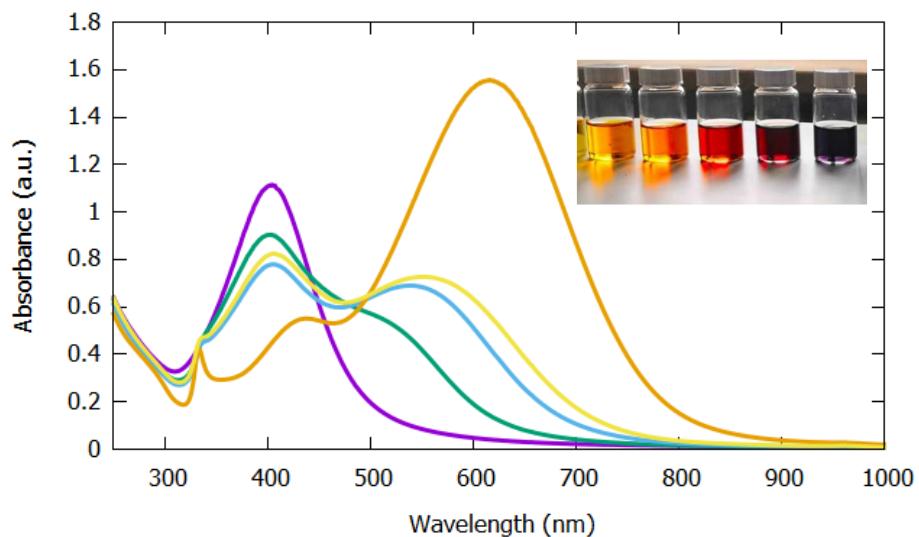
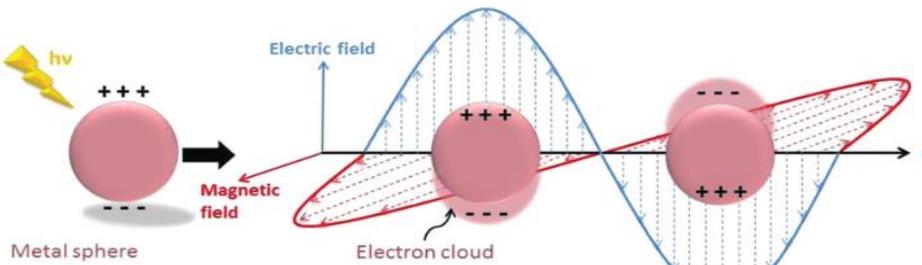
Maria Rosa Gigliobianco^{1,*}, Barbara Campisi^{2,†}, Dolores Vargas Peregrina^{1,3},
Roberta Censi¹, Gulzhan Khamitova^{1,2}, Simone Angeloni¹, Giovanni Caprioli^{1,2},
Marco Zannoni^{4,5}, Stefano Ferraro¹, Rita Giovannetti^{1,2}, Cristina Angeloni^{1,2}, Giulio Lupidi¹,
Letizia Pruccoli^{5,6}, Andrea Tarozzi^{5,6}, Dario Voinovich^{1,2} and Piera Di Martino^{1,*}

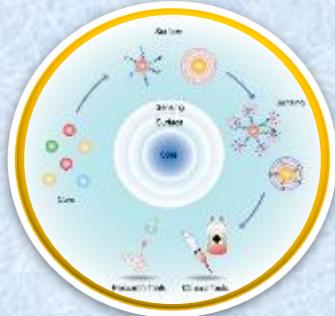


FUNCTIONAL NANOMATERIALS

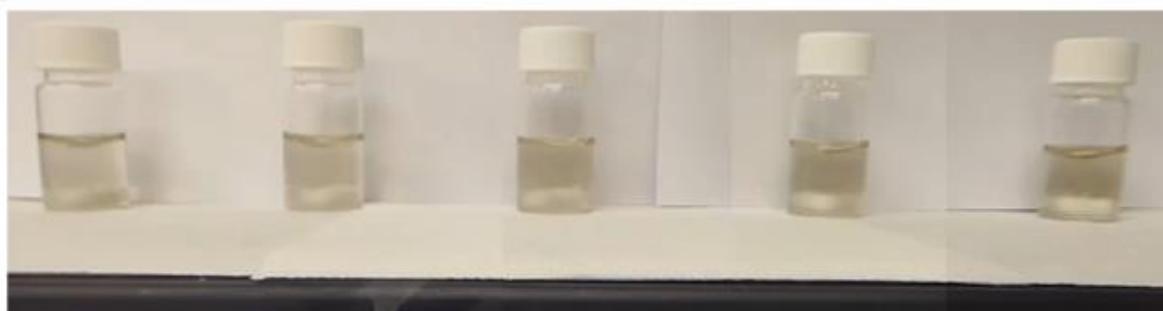
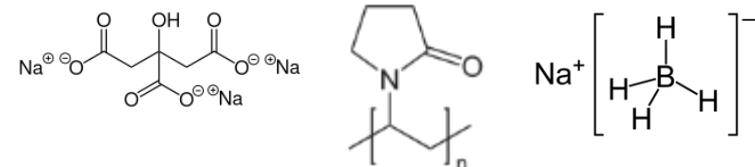
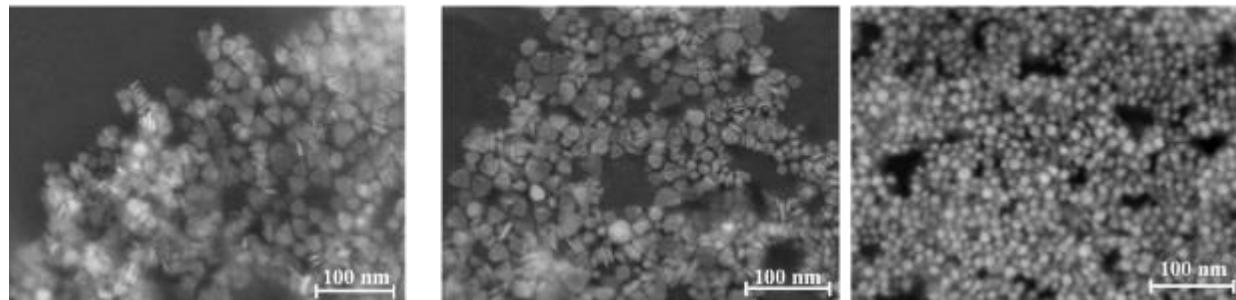
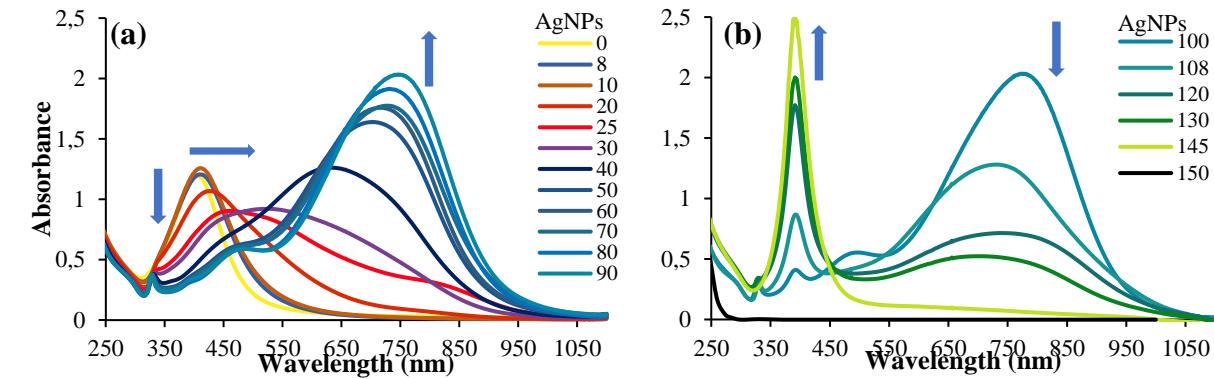
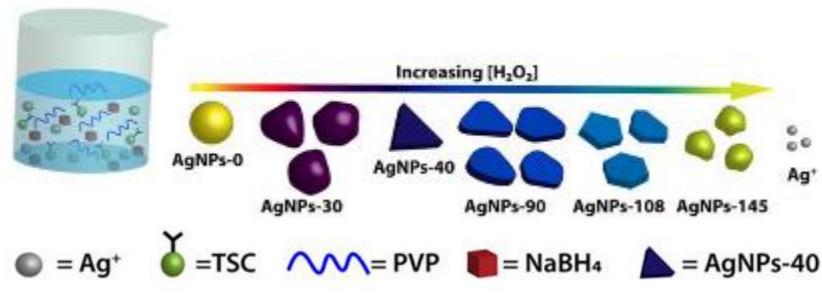


Localized Surface Plasmon Resonance (LSPR)





Sensors



Contents lists available at ScienceDirect
Journal of Molecular Liquids

journal homepage: www.elsevier.com/locate/molliq

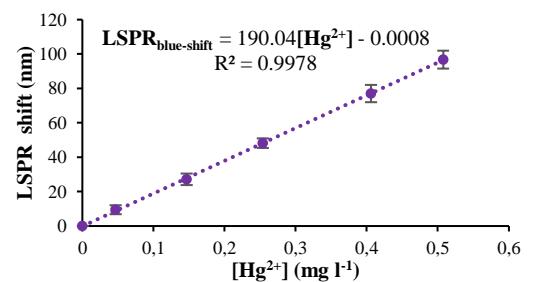
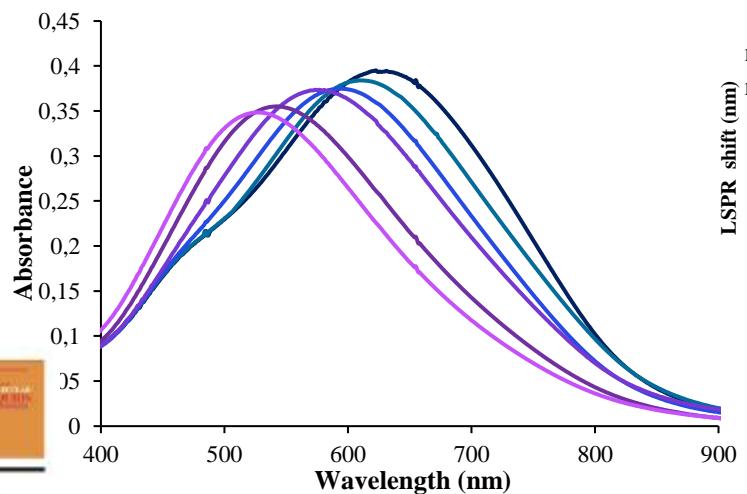
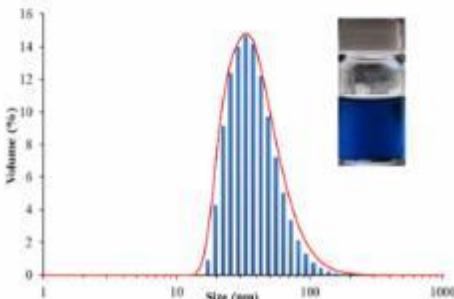
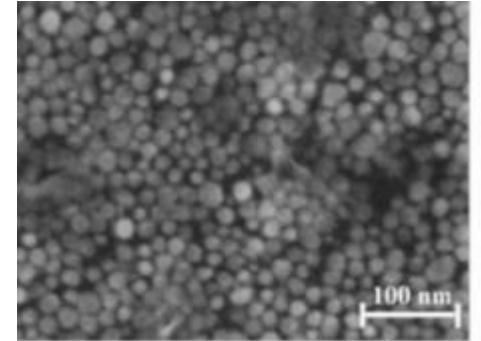
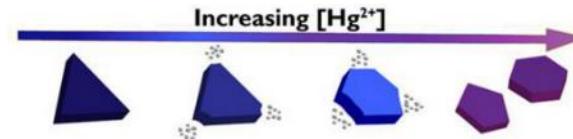
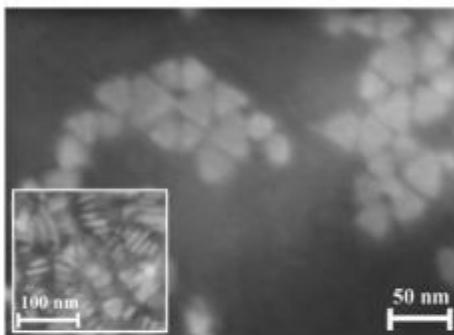


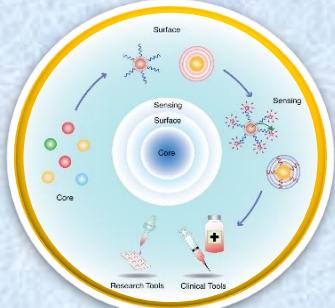
Tuning of hydrogen peroxide etching during the synthesis of silver nanoparticles. An application of triangular nanoplates as plasmon sensors for Hg^{2+} in aqueous solution

Marco Zannotti ^{a,*}, Vittorio Vicomandi ^a, Andrea Rossi ^a, Marco Minicucci ^b, Stefano Ferraro ^a, Laura Petetta ^a, Rita Giovannetti ^{a,*}



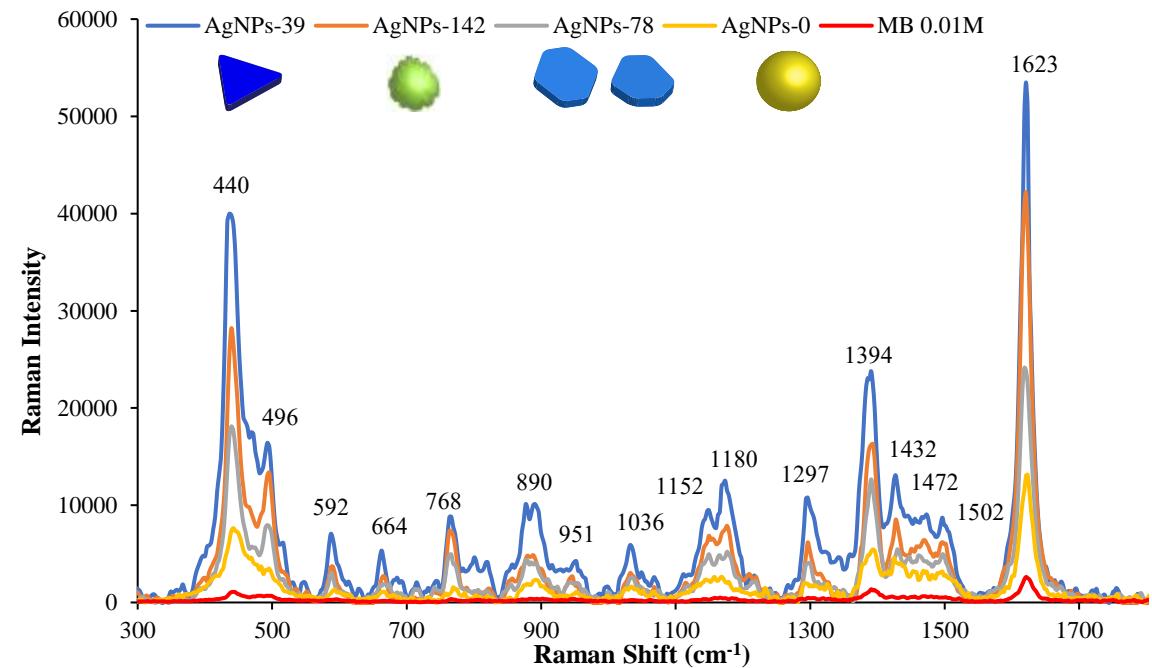
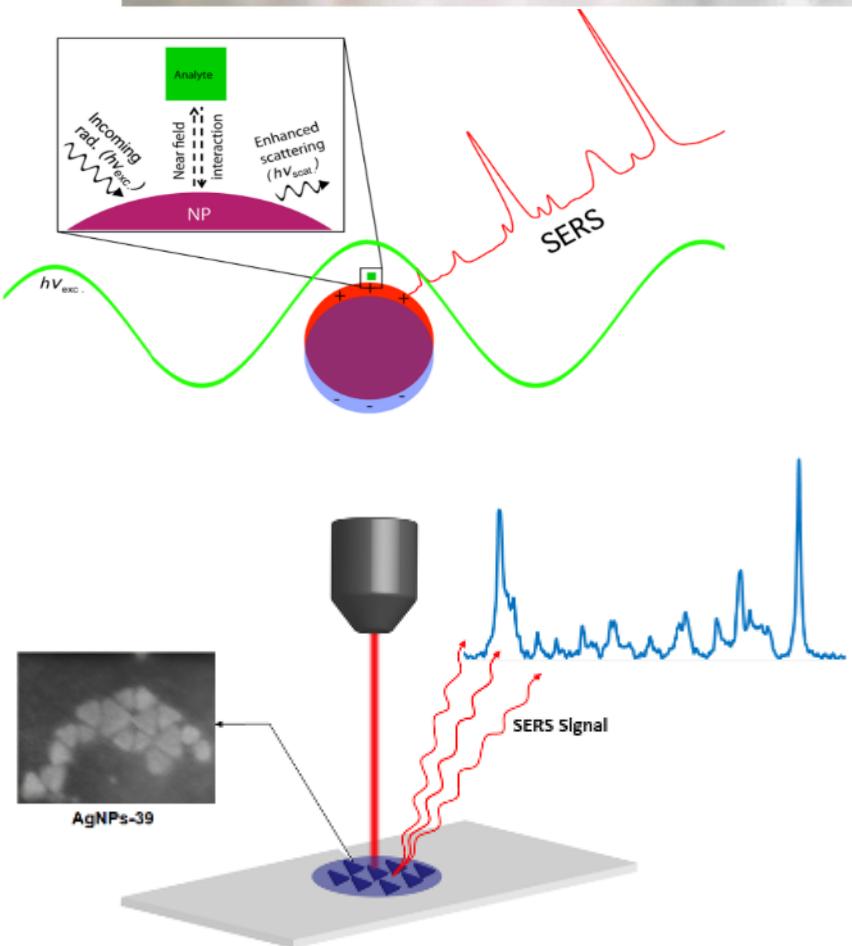
Ag Nanoparticles: sensor for mercury ions





Sensors

Ag Nanoparticles: SERS activator



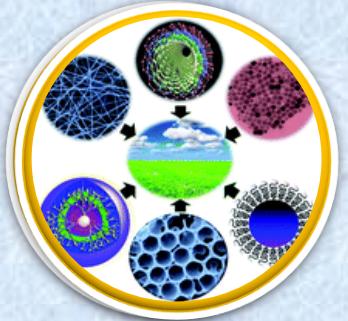
coatings



Article

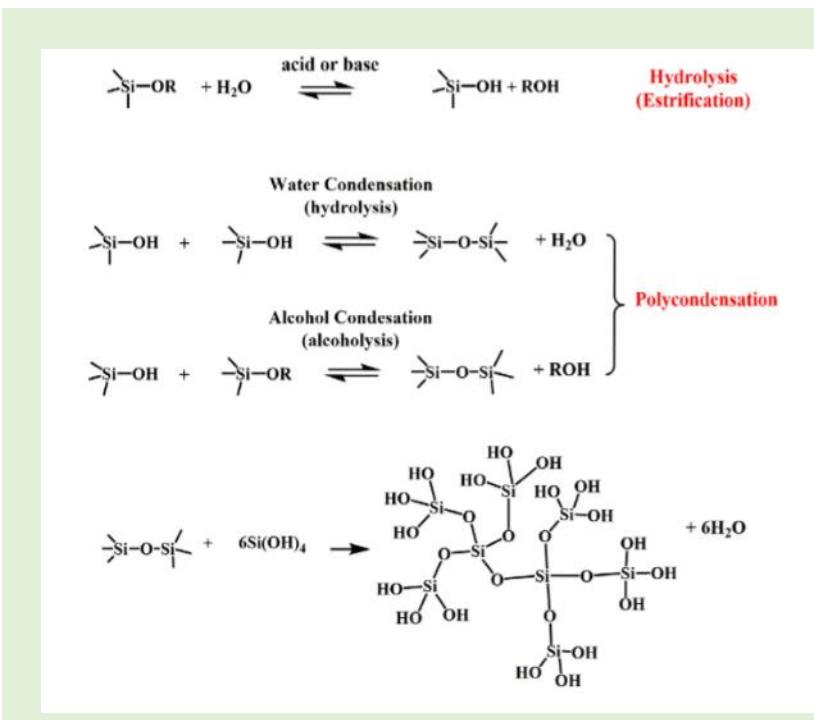
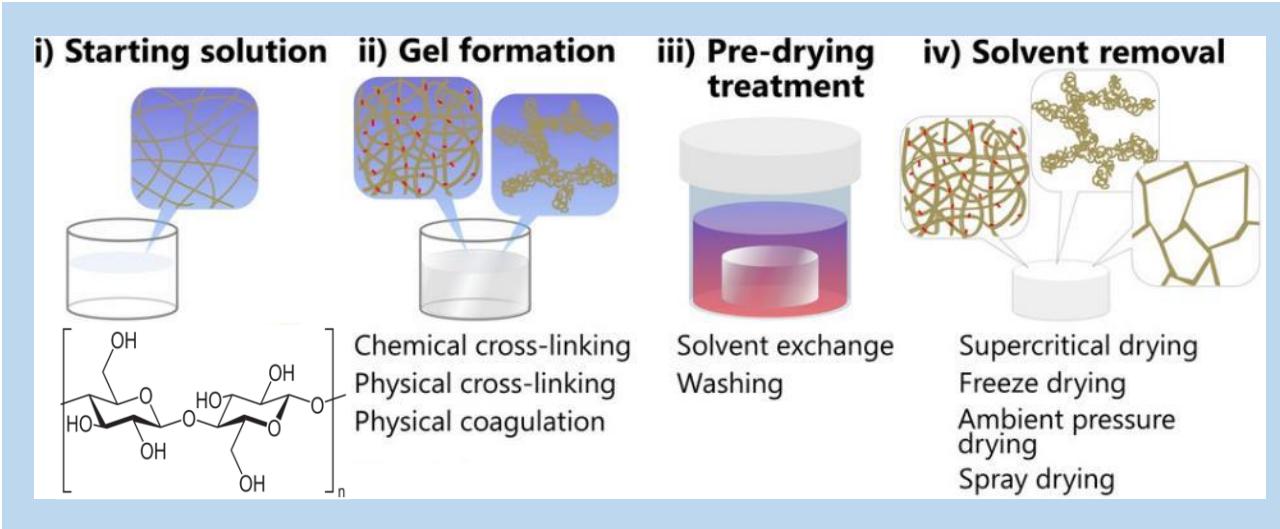
SERS Activity of Silver Nanosphere, Triangular Nanoplates, Hexagonal Nanoplates and Quasi-Spherical Nanoparticles: Effect of Shape and Morphology

Marcio Zannotti * Andrea Rossi and Rita Giovannetti



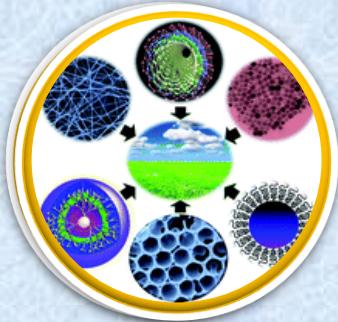
Pollutants
Absorbing Materials

CELLULOSE AEROGEL



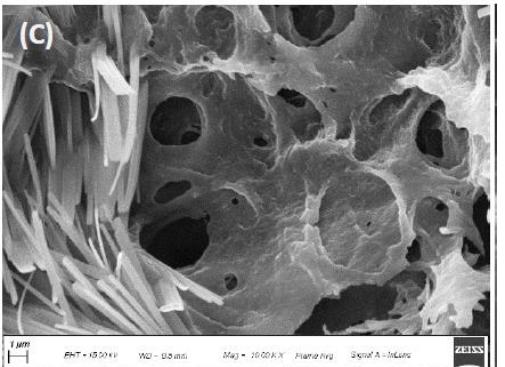
SILICA-BASED XEROGEL



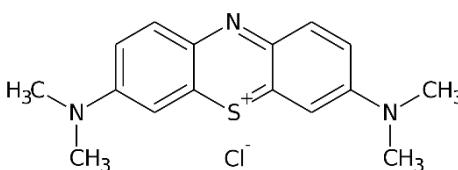
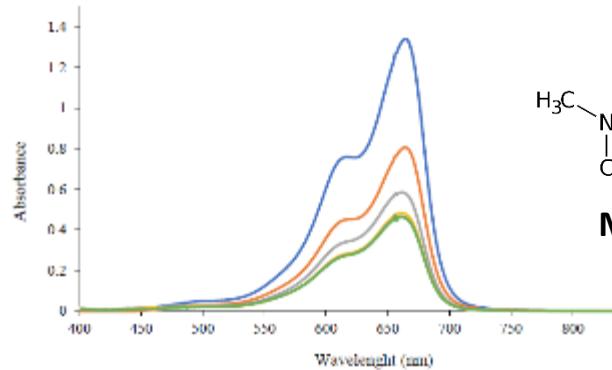
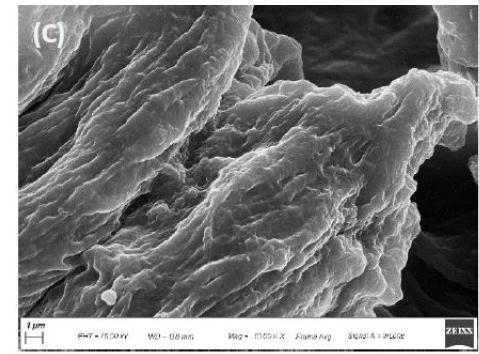


Pollutants
Absorbing Materials

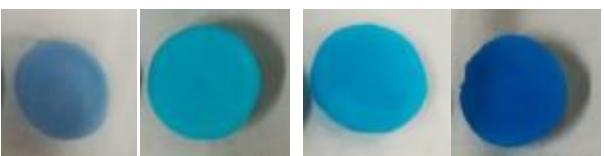
CELLULOSE AEROGEL



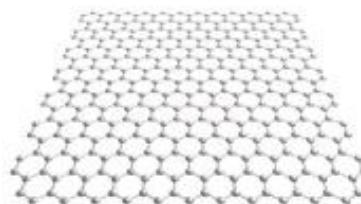
CELLULOSE AEROGEL & graphene



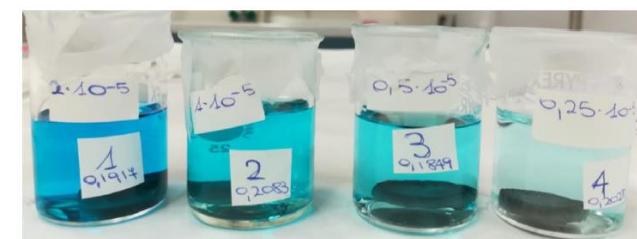
Methylene Blue (MB)

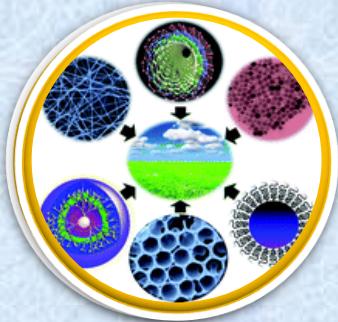


Increasing concentration of MB



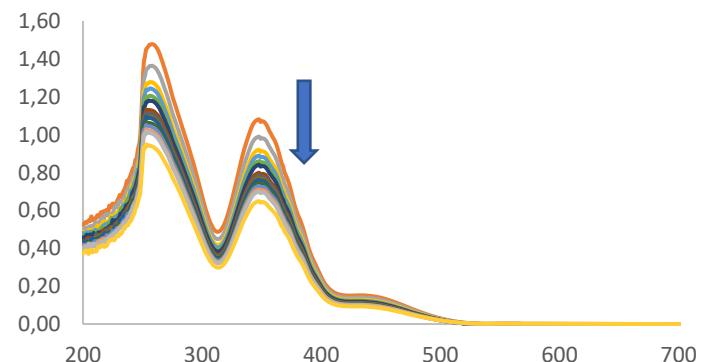
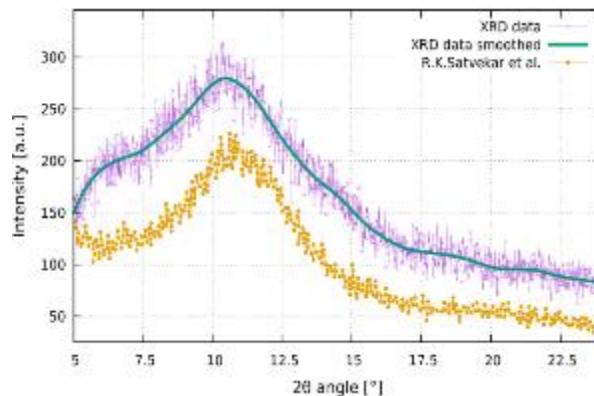
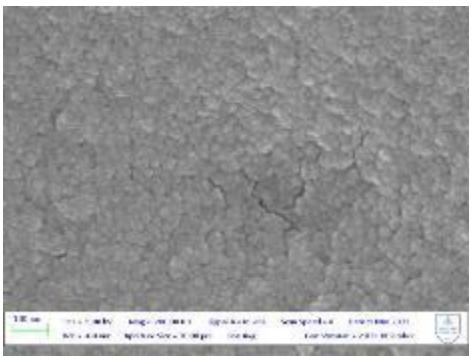
Graphene





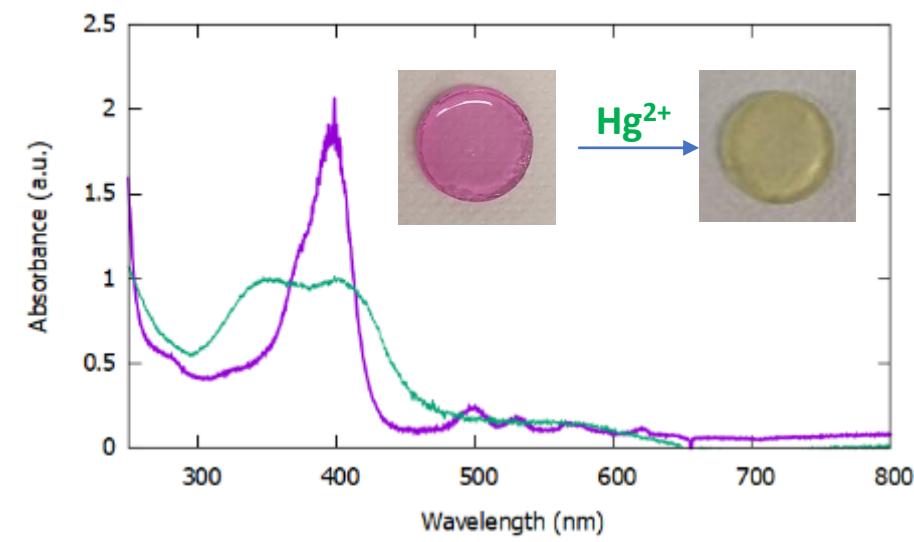
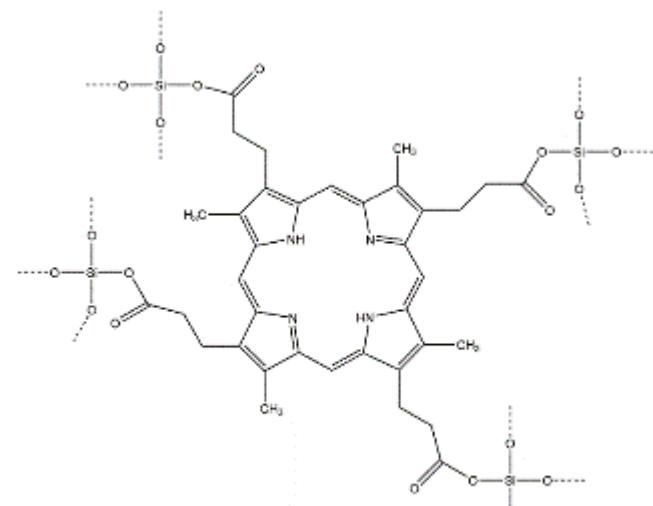
Pollutants
Absorbing Materials

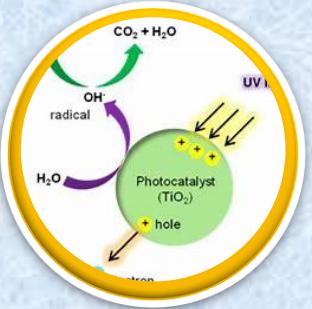
SILICA-BASED XEROGEL



Increasing concentration of Cr(VI)

PORPHYRIN SILICA-BASED XEROGEL





**Photoactive
Nanostructured
Materials**

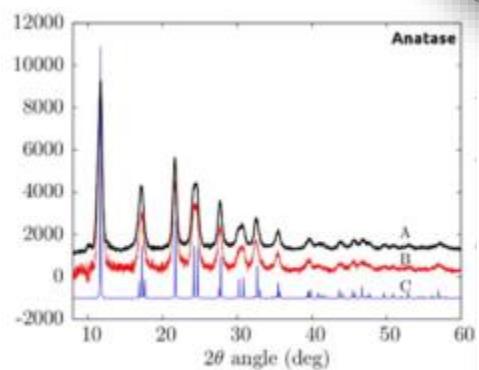
PHOTODEGRADATION: TiO_2 coated materials



Dip-coating



TiO_2

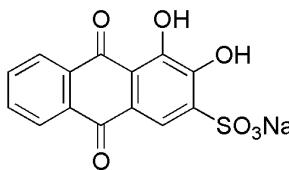


SCIENTIFIC REPORTS

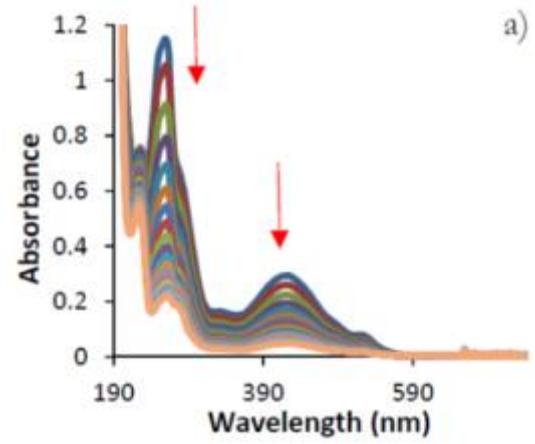
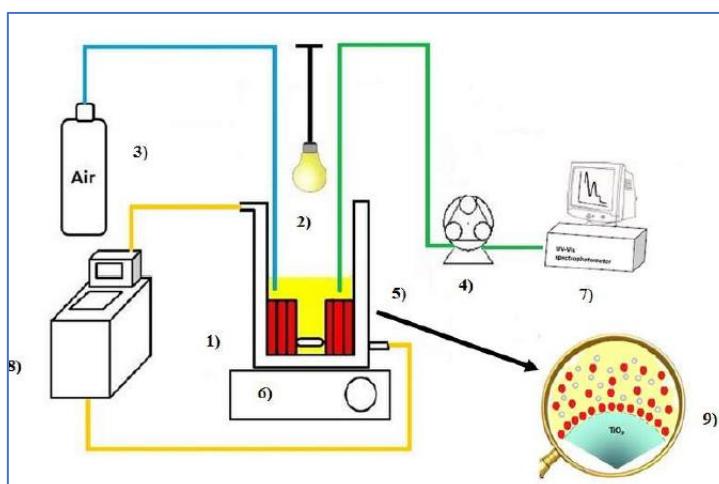
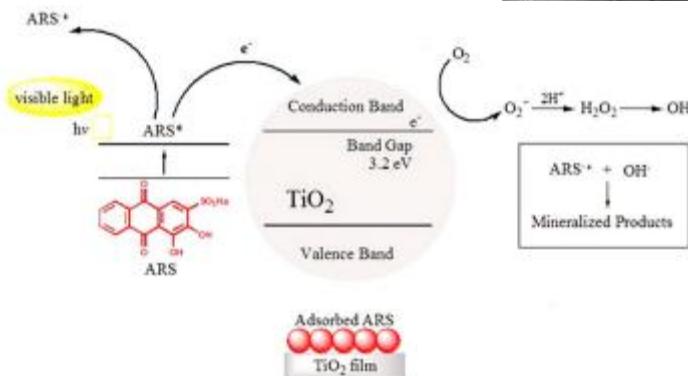
OPEN Visible light photoactivity of Polypropylene coated Nano- TiO_2 for dyes degradation in water

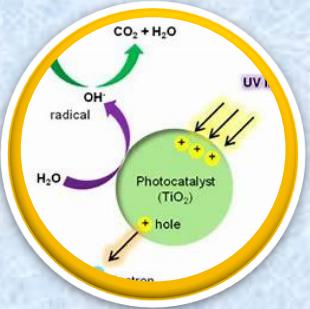
Received: 21 July 2015
Accepted: 06 November 2015
Published: 02 December 2015

R. Giovannetti¹, C.A. D'Amato¹, M. Zannotti¹, E. Rommozzi¹, R. Gunnella², M. Minicucci² & A. Di Cicco²



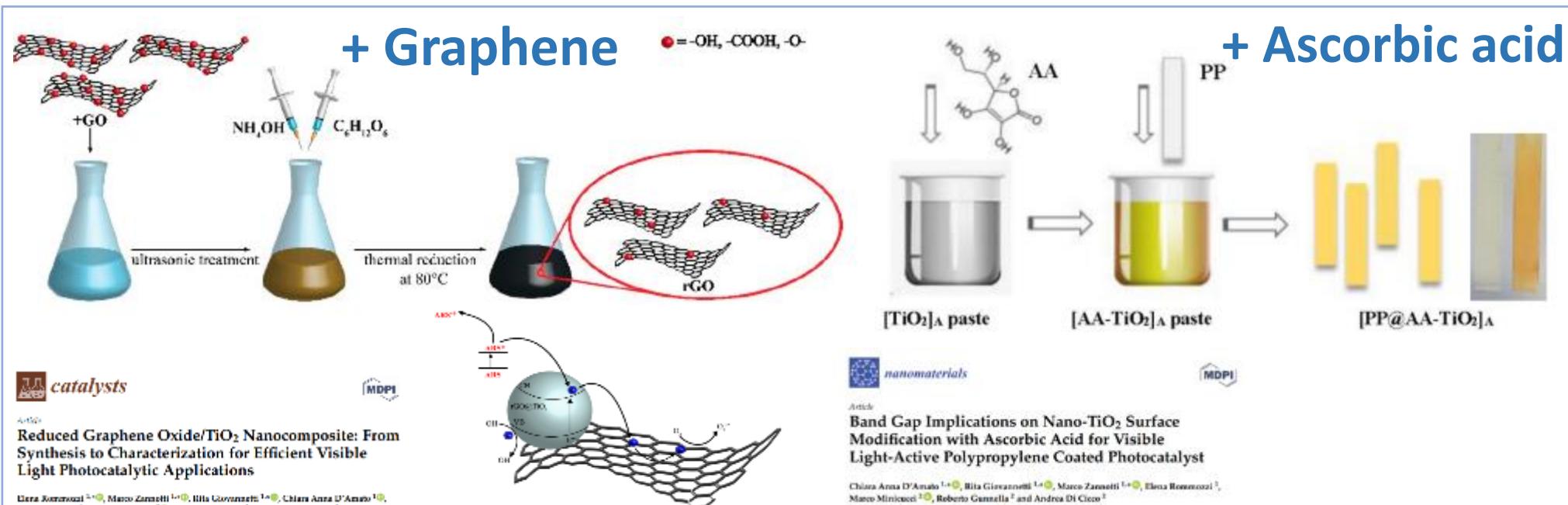
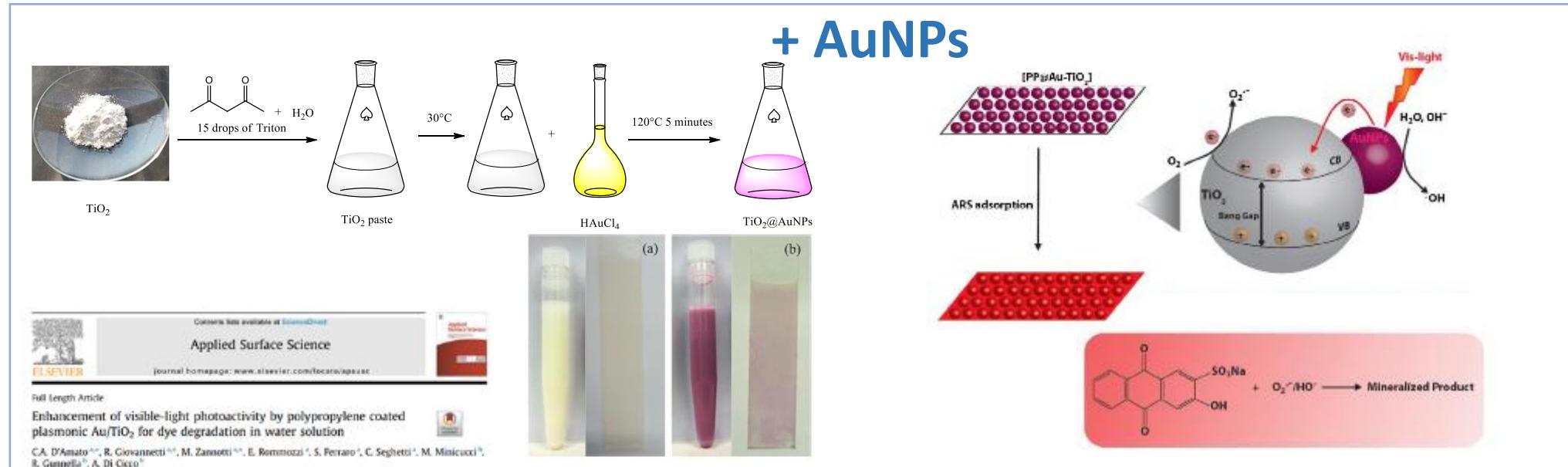
Alizarin Red-S

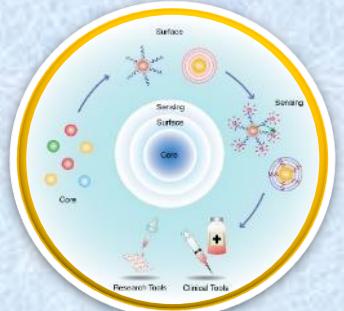




**Photoactive
Nanostructured
Materials**

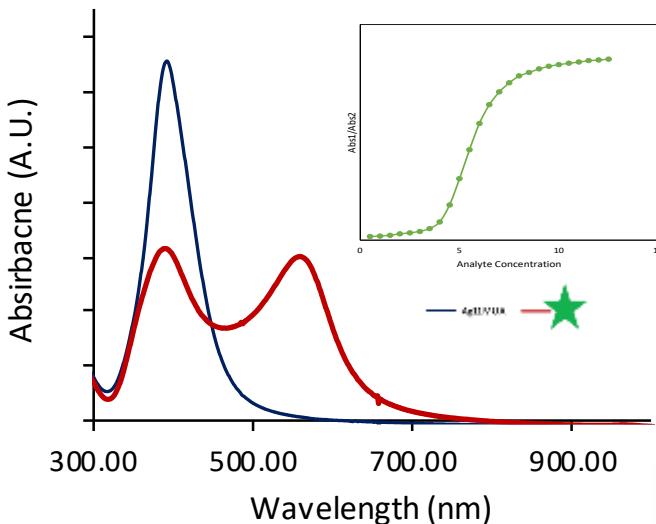
INCREASING PHOTODEGRADATION ACTIVITY



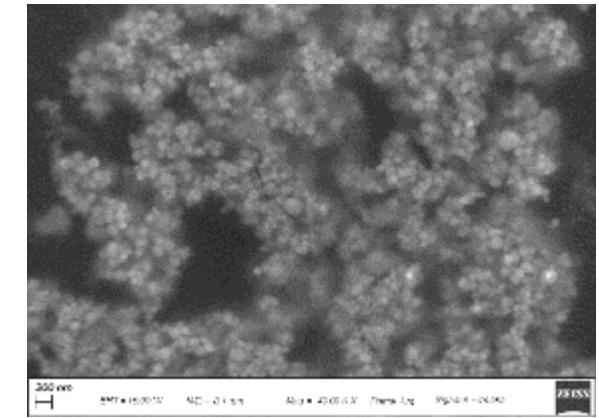
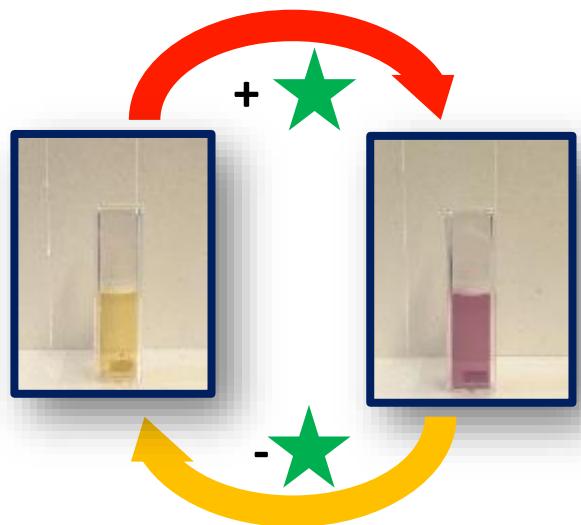


Sensors

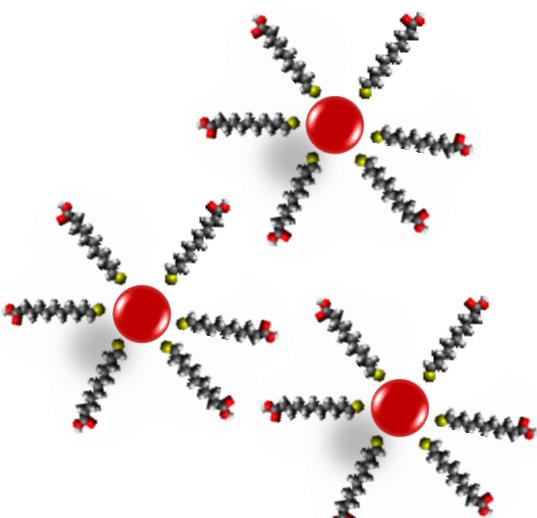
NANOPARTICLES BASED COLORIMETRIC SENSOR



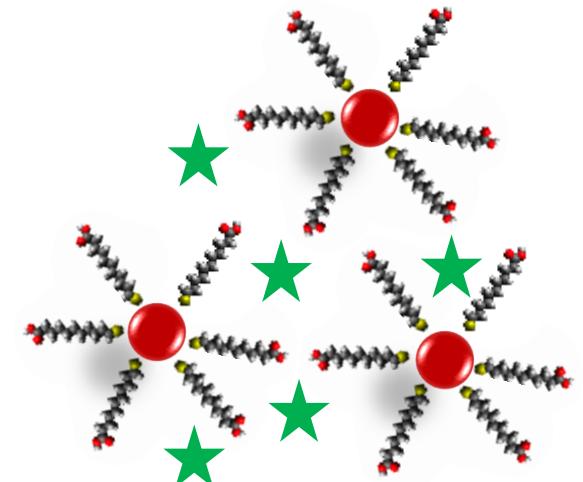
NPs@11MUA monodisperse



NPs@11MUA aggregate



Target molecules



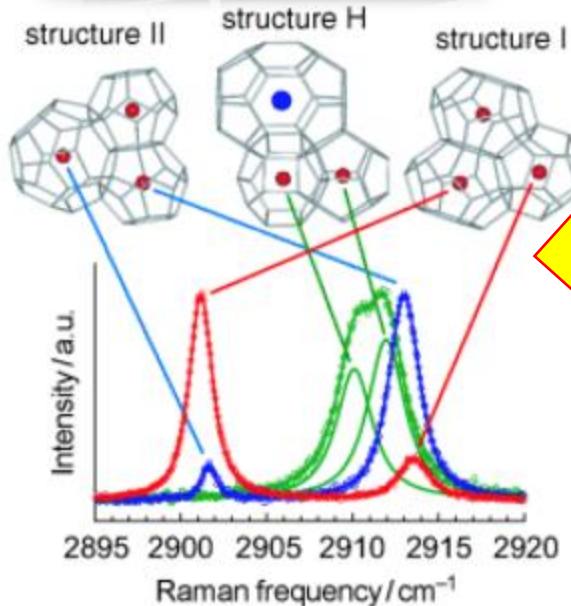
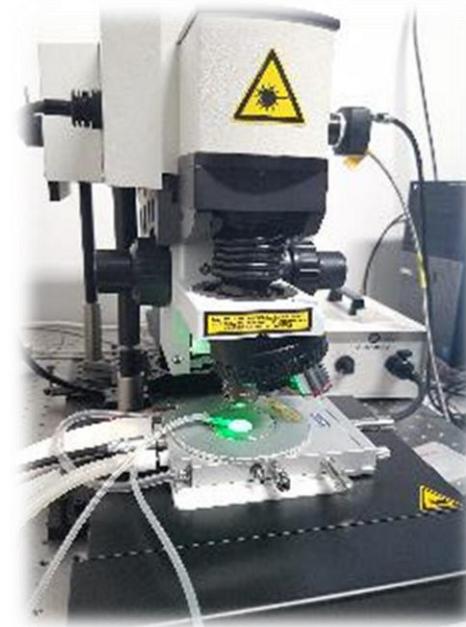
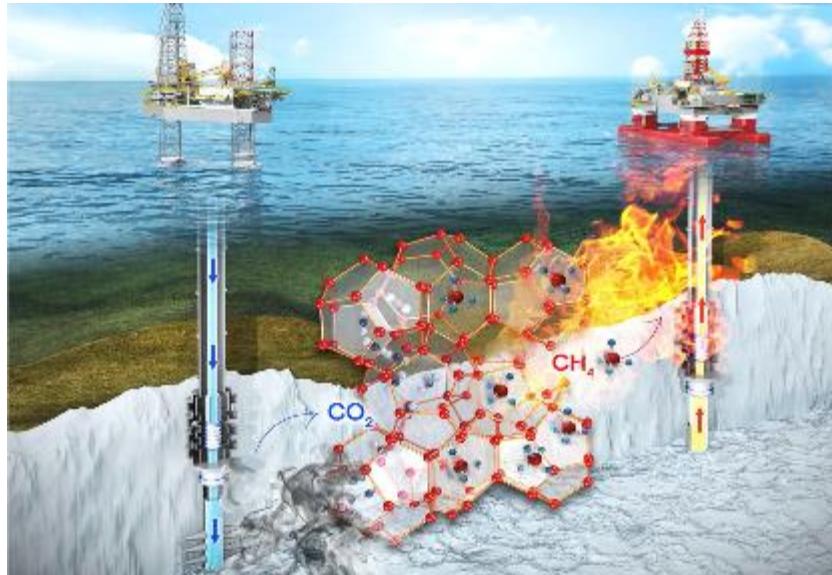
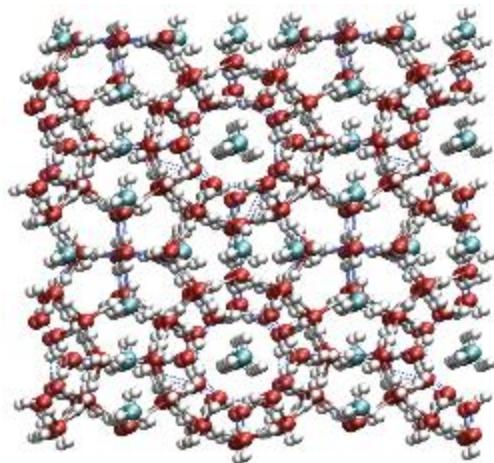
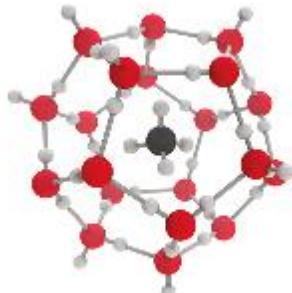


Ministero dell'Istruzione,
dell'Università e della Ricerca



PRIN 2017
Methane recovery
and carbon
dioxide disposal in
natural gas
hydrate reservoirs

NATURAL NANOCLUSTERS: GAS HYDRATES



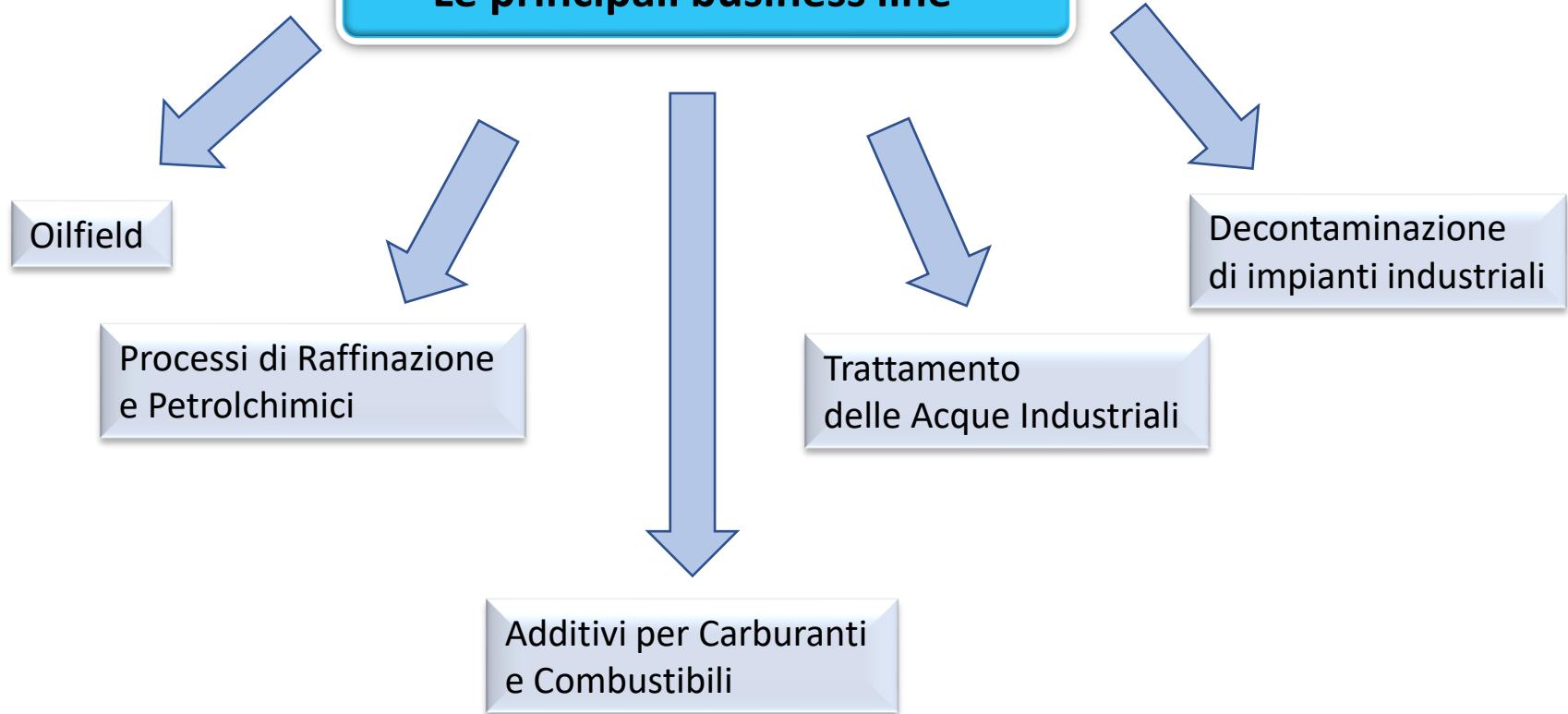


**RESEARCH and
DEVELOPMENT**

CHIMEC è una azienda italiana, fondata nel 1971, attualmente attiva in oltre 65 nazioni, con sede nella zona industriale di Roma.

L'azienda è specializzata nello sviluppo ed applicazione di additivi e tecnologie innovative in ambito petrolifero e petrolchimico ed altri settori industriali.

Le principali business line

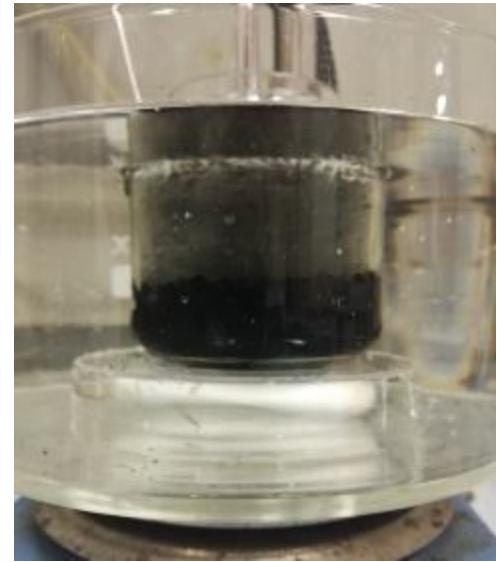




RESEARCH and
DEVELOPMENT

Progetti di ricerca

“Surfattanti di origine naturale”
in processi di Tank Cleaning



“H₂S Scavengers”, in grado di inibire o ridurre la formazione di H₂S, con applicazioni in ambiente lavorativo, garantendo la sicurezza dei processi e di conseguenza dei lavoratori in impianto



“Carbonyl Scavenger” per ridurre o inibire i processi di polimerizzazione aldolica all'interno di torri di lavaggio caustiche in modo da limitare o evitare problematiche di processo negli impianti di produzione di olefine.

