

Olimpia Tammaro, PhD
Materials Engineer

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Curriculum Vitae

Olimpia Tammaro graduated in Materials Engineering from the University of Naples "Federico II" (Italy) in 2016, with a master thesis focused on the synthesis and characterization of TiO₂-Melanin hybrid nanoparticles for antimicrobial purposes. In April 2020, she obtained the European PhD degree in Industrial Products and Processes Engineering at the University of Naples "Federico II" with a fellowship at the Center for Advanced Biomaterials for Healthcare (CABHC@IIT-Istituto Italiano di Tecnologia) coordinated by Prof. P.A. Netti. From 2020 to early 2022, she joined the group of professors B. Bonelli and S. Esposito at PoliTo (Turin) as a PostDoc. Since February 2022 she has been involved in the ANFIBIO project under the supervision of Prof. L. Fabris, based at Politecnico di Torino (Turin, Italy).

Her research has been devoted to nanotechnologies with particular attention to the medical field. She studied hybrid nanosystem pHEMA-SiO₂, during bachelor work thesis, moving to hybrid TiO₂-Melanin nanoparticles as an agent for antimicrobial activity during her master thesis. After that, during the PhD study, her research project has been focused on the development of microfluidic platforms to design nanostructures with improved multi-modal imaging properties and theranostic abilities, under the supervision of PhD Enza Torino. In particular, her attention was focused on the possibility to combine different diagnostic techniques such as MRI and Optical Imaging in a unique polymeric nanovector. Indeed, the encapsulation of CAs and Dyes inside a polymeric tailored nanostructure leads to increase efficacy and, potentially, decrease side effects. Thanks to a microfluidic approach, the tunability of process parameters makes it possible to modulate nanoparticles features and obtain desired relaxometric properties and fluorescence signals without any chemical modification of the payload agents. Her research interest involved also the development of new contrast agents for Magnetic Resonance Imaging exploiting the Hydrodenticity theory. During her PhD, she visited Prof. L. De Cola's lab at Supramolecular Science and Engineering Institute-ISIS, Strasbourg, to work on a combination of silica nanoparticles and biopolymeric matrix for MRI application.

As a PostDoc at PoliTo, with prof. B. Bonelli and S. Esposito, her research interests are the study of materials for biomedical and clean energy applications. She has been involved in a research project in collaboration with ENI SpA, for the development of MOF-based composite for natural gas storage (ANG). In the field of porous materials, she investigates the development of extremely versatile nanocomposites, obtained from zeolite precursors. The magnetic nanocomposites, developed starting from natural zeolites, have been shown to mimic the chemical and mineralogical composition and the electrical and magnetic properties similar to that of real lunar dust. The same materials used for the study of lunar simulants, have been used as adsorbents for the removal of new aquatic pollutants, such as the class of antibiotics represented by "sulfa-drugs". She was also interested in the development of oxide nanosystems for catalytic applications such as NO_x-Selective Catalytic Reduction and photodegradation of water pollutants.

As a PostDoc in Prof. Fabris's group, her research activity is focused on the optimization of multibranched gold nanostar synthesis for SERS signal enhancement for diagnostic purposes.

Besides the scientific path, she has always been a member of student and *pro loco* associations (in Casagiove, CE).

From November 2011 to November 2012 she has been Human Resources Responsible within the student association Best-Naples (XVIII board). BEST- Board of European Students of Technology is a no-profit organization present in 95 prestigious technical universities all over Europa. BEST aims at helping European students of technology to become more internationally minded, by reaching a better understanding of European cultures and developing capacities to work on an international basis. In 2017 she was involved in the first edition of the StarShip Programme – an EIT Health educational initiative in collaboration with leading European health industrial partners. During the one-year-long program, she learned a proven, action-based approach to finding a solution to industry challenges, verifying user requirements and identifying potentially unmet needs in the health context, in close collaboration with key industrial players and leading local EIT

Health innovating institutions. In the same year, she has been involved in the start-up project HydroBlink, awarded at StartCup Campania 2017 and presented during the PNI2017 exhibition. In 2018, she obtained the qualification for the profession of engineer.

Publications

F. Tescione, O. Tammaro, A. Bifulco, G. Del Monaco, S. Esposito, M. Pansini, B. Silvestri, A. Costantini *Silica Meets Tannic Acid: Designing Green Nanoplatfoms for Environment Preservation*, *Molecules*, 2022, 10.3390/molecules27061944

G.Barrera, P. Allia, P. Tiberto, O. Tammaro, M. Pansini, A. Marocco M. Manzoli, G. Confalonieri R. Arletti, S. Esposito. *Magnetic clustering of weakly interacting Ni-ions in Ni-exchanged zeolites*, *Microporous and Mesoporous Materials*, 2022, 10.1016/j.micromeso.2022.111786

F. Sannino, M. Pansini, A. Marocco, A. Cinquegrana, S. Esposito, O. Tammaro, G. Barrera, P. Tiberto, P. Allia, D. Pirozzi. *Removal of sulfanilamide by tailor-made magnetic metal-ceramic nanocomposites adsorbents*, *J Environ Manage*, 2022, 10.1016/j.jenvman.2022.114701

M. Manzoli, O. Tammaro, A. Marocco, B. Bonelli, G. Barrera, P. Tiberto, P. Allia, J.-C. Matéo-Vélez, A. Roggero, E. Dantras, R. Arletti, M. Pansini, S. Esposito. *New Insights in the Production of Simulated Moon Agglutinates: the Use of Natural Zeolite-Bearing Rocks*, *ACS Earth Space Chem*, 2021, 10.1021/acsearthspacechem.1c00118

B. Bonelli, O. Tammaro, F. Martinovic, R. Nasi, G. Dell'Agli, P. Rivolo, F. Giorgis, N. Ditaranto, F.A. Deorsola, and S. Esposito. *Reverse Micelle Strategy for the Synthesis of MnOx–TiO₂ Active Catalysts for NH₃-Selective Catalytic Reduction of NO_x at Both Low Temperature and Low Mn Content*, *ACS Omega* 2021, 10.1021/acsomega.1c03153

O. Tammaro, A. Costagliola di Polidoro, E. Romano, P.A. Netti, E. Torino. *A Microfluidic Platform to design Multimodal PEG - crosslinked Hyaluronic Acid Nanoparticles (PEG-cHANPs) for diagnostic applications*, *Scientific Reports*, 2020, 10.1038/s41598-020-63234-x

G. Vitiello, A. Zanfardino, O. Tammaro, M. Di Napoli, M. F. Caso, A. Pezzella, M. Varcamonti, B. Silvestri, G. D'Errico, A. Costantini, G. Luciani. *Bioinspired hybrid eumelanin–TiO₂ antimicrobial nanostructures: the key role of organo–inorganic frameworks in tuning eumelanin's biocide action mechanism through membrane interaction*, *RSC Adv.*, 2018, 10.1039/C8RA04315A

M. Russo, A.M. Grimaldi, P. Bevilacqua, O. Tammaro, P.A. Netti, E. Torino. *PEGylated crosslinked hyaluronic acid nanoparticles designed through a microfluidic platform for nanomedicine*, *Nanomedicine*, 2017, 10.2217/nnm-2017-0103

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