

SHORT BIO:

Giuliana Taglieri.

Qualified Full Professor, SSD IMAT-01/A, Materials Science and Engineering

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Giuliana Taglieri received his degree in in Physics from University of L'Aquila (Italy) in 1992. From 1992 up to 1995 she worked at the Department of Physics of the University of L'Aquila and at the Research Center ENEA (Frascati, Italy) for the realization and characterization of an X-ray source by plasma produced by an excimer laser. She carried out a study on the application of the X-ray microscopy source, in collaboration with the Rutherford Appleton Laboratory (RAL), Oxford (UK). From 1995 up to 2006, she was Researcher at the University of L'Aquila, in Materials Science and Engineering (ex ING-IND/22), at the Department of Chemistry, Chemical Engineering and Materials. From 2006 until today, she is full time Associate Professor in Materials Science and Engineering (ex ING-IND/22, 09-D1) at the Department of Industrial and Information Engineering and Economics (DIIIE) of University of L'Aquila. On 13 November 2021 she got the National Scientific Habilitation functions for Full Professor in the sector IMAT-01/A Materials Science and Engineering.

She teaches for the course of "Materials Science and Engineering and Applied Chemistry", "Materials Science and Engineering", for the Industrial Engineering Degree at the University of L'Aquila. From 2008 until today she was supervisor of more than 50 experimental thesis in the Courses of Industrial Engineering and of Chemical Engineering; she is internal doctoral advisor of two thesis at the Doctoral Course of Industrial and Information Engineering and Economics (University of L'Aquila) and external advisor of two doctoral thesis at Materials and Engineering Research Institute, Sheffield Hallam University (UK).

Giuliana Taglieri's research focuses on the synthesis and the characterization of materials, with particular attention to oxide/hydroxide nanoparticles and advanced ceramic materials as well. Specifically, from 1995 to 2005 she developed a wet preparative technique, to obtain powders to produce massive ceramic materials, characterized by a high degree of homogeneity and stoichiometry: powders and sintered barium zirconate - BaZrO₃, high critical temperature superconducting composite materials, YBCO/Ag; SCGO, an advanced ceramic oxide, of interest for basic physics thanks to its peculiar magnetic properties. Since 2005, her research has mainly focused on the synthesis and study of innovative materials in the field of nanotechnologies. In this aim, in 2012 she developed an innovative and sustainable synthesis procedure, patented at European level, to produce nanoparticles of calcium hydroxides (called *nanolimes*). Successively, she optimized the procedure to synthesize other alkaline-earth metal hydroxides, such as

magnesium, strontium, and barium as well. The research has also been devoted to the nanolimes applicative studies in Cultural Heritage, in relation to conservative, eco-friendly and compatible treatments on natural lithotypes and historical mortars, as well as in the deacidification of ancient paper and woods. She also developed innovative and sustainable procedures for the synthesis of several other kinds of metal oxides/hydroxides nanoparticles, attaining two Italian patent on the development of innovative synthesis of nanoparticles of iron oxides/oxyhydroxides and of a new Fe/Ca oxide compound.

She gained experience in numerous techniques, in relation to chemical-physical characterization of materials, (spectroscopic techniques with X rays, IR sources, visible, UV, neutrons; porosity / surface area measurements, particle size), thermal analyzes, and direct investigation techniques such as optical microscopy, electron microscopy, and atomic force microscopy. She is the scientific director of the Laboratory of Technology of Materials and Applied Chemistry at DIIE, as well as the scientific coordinator of several national and international Agreements between the University of L'Aquila and Research Centers and Private Companies, as well as the Archeological Park of Colosseo in Rome. She participated as proposer to several research experiments at the International Center of Research "Institute Laue-Langevin" (ILL), Grenoble (FR). She is member of Associazione Italiana di Ingegneria dei Materiali (AIMAT) and of the Italian Consortium on Materials Science and Technology (INSTM).

She is the holder of a European patent and of two Italian Patent concerning the development of innovative and sustainable procedure to synthesize calcium hydroxide nanoparticles, iron oxide nanoparticles and iron/calcium oxide nanoparticles respectively. She is the author of more than 150 papers and proceedings to international conferences, including 79 publications indexed in SCOPUS.

She designed and created a system to scale the production of nanoparticles at an industrial level, and she is the main founding partner and Sole Director of the academic Spin-Off SNAPTECH S.R.L., an innovative start-up established on 01/10/2021 to produce nanoparticles of metal oxides starting from sustainable synthesis, with low energy consumption and reduced environmental impact. For its innovation degree, the start-up SNAPTECH S.R.L. received several Prizes, both at regional and at national level.