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Finizia Auriemma

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Finizia Auriemma was born on 25 March 1961. She is Full Professor of Macromolecular and Industrial Chemistry at the University of Napoli Federico II since the 2014. She obtained the degree in Chemistry (Summa cum Laude) in 1984, and the PhD in Chemistry in 1989 at the University of Napoli Federico II under the supervision of Prof. Paolo Corradini. She became Assistant Professor of General and Inorganic Chemistry in 1990 and Macromolecular and Industrial Chemistry in 1994. She became Associate Professor in Macromolecular and Industrial Chemistry in 2002.

She has spent several periods of research abroad, as Visiting Scientist at Max-Planck-Institut für Polymer Forshung, Mainz, Germany (1989, 3 months and 1994/95 10 months), as visiting professor at Institute Charles Sadron in Strasbourg, France (1997, 1 month); Laboratoire de Physique des Solides, Université Paris-Sud, Orsay, France (2001, 1 month); and the Department of Physics, University of Reading, Reading, UK (2006, 1 month).

She has performed short time visits abroad (for less than 1 week), holding seminars on invitation, at several research institutions, namely the Laboratoire de Recherche sur les Polymères, CNRS-LRP, Thiais France (2001); Polytechnic University Brooklyn, NY (2003); University of Akron (2003); Cornell University, Ithaca (2003); Department of Engineering Materials, University of Sheffield (2006); DSM Ahead, Geleen, The Netherlands (2013); ILL Grenoble, France (2013); Laboratoire de Polymères et Matériaux Avancés CNRS/Solvay, Saint-Fons, France (2014).

She is recipient of the Italian Prize for the Chemical Science awarded by the "Accademia di Scienze Fisiche e Matematiche" (1995); the final prize for the researches performed in Mainz awarded by the Consiglio Nazionale delle Ricerche (C.N.R., 1995); two research incentives UNA TANTUM for the three years 2008-2010 and 2010-2012. She achieved a positive evaluation for the overall research, teaching and management commitment for the three-year period 2016-2019.

Prof. Auriemma teaches courses in Polymer and Material Science for undergraduate students of Industrial Chemistry (Bachelor course) and Sciences and Technologies of Industrial Chemistry (Master course), namely Macromolecular Chemistry II (from 2003 to date), Laboratory of Material Science (from 1995 to 2018), Structure and Properties of Polymers (from 2016 to date) and a short course for Ph.D students "Structural analysis of materials at nanoscale through Small Angle X-ray Scattering methods" from 2012 to 2018, "Structure and Dynamics of Molecules and Macromolecules by Elastic and Inelastic Scattering Techniques" since the 2019 to date.

She carries out an intense activity as supervisor and/or tutor of undergraduate students of Chemistry and Industrial Chemistry for the Bachelor and Master theses (>100) and of graduate student for the Ph.D. (10) thesis.

She was part of national and international academic boards for the final Ph.D. examination including: Université Paris XII-Val de Marne (June 2004); University of Rome La Sapienza (march 2006); Eindhoven University of Technology, Eindhoven, The Netherlands (september 2013), INSA-LYON MATEIS, Villeurbanne, Francia (march 2015); ESPCI, Paris, France (July, 2019).

She is referee of international journals like Journal of the American Chemical Society, Macromolecules, Chrystal Growth & Design, Journal of Physical Chemistry B and C, Chemistry of

Materials, Biomacromolecules, Polymer, Macromolecular Chemistry and Physics, Macromolecular Rapid Communications, Journal of Polymer Science B, Journal of Applied Polymer Science, European Polymer Journal and many others. Actually, she is Associate Editor of *Frontiers in Soft Matter*, Section:Polymers.

She is author of about 230 papers published in international peer reviewed scientific journals (H index=47 (SCOPUS), average citations/item= 29.98, H index=45 (WEB of Science), citation/item = 27.59), and of about 300 communications at international conferences. These papers have been published in the most prestigious chemistry and macromolecular journals. In particular, almost half of papers have been published in *Macromolecules*, 6 in *Journal of the American Chemical Society*, 4 in *Chemistry of Materials*, 3 in *Journal of Chemical Physics B*, 3 in *Advanced Materials*, 6 in *Angewandte Chemie Int. Ed.*, 1 in *Physical Review Letter*; 1 in *Journal of Applied Crystallography*; 7 review articles are published in *Advances Polymer Science*, *Progress in Polymer Science*, *Lecture Notes in Physics*, *Accounts of Chemical Research*, *Polymer Chemistry (Royal Society)*; she is co-author of a monographic text-book "*Crystal and Crystallinity in Polymeric Materials*". She is also co-authors of numerous book chapters (10).

Her research activity namely consists in the study of the relationships between the molecular structure and physical properties of semicrystalline polymeric materials, using theoretical and experimental approaches. Significant results have been achieved in the study of partially disordered macromolecular systems through the theoretical development of algorithms for the prediction of phase transitions based on statistical mechanics and of the diffraction patterns of these systems (Diffraction Modeling Method). The theoretical approach is accomplished by experimental studies performed using X-ray, electrons and neutron diffraction, electron microscopy, solid state Nuclear Magnetic Resonance, mechanical and thermal analysis of polymeric materials, measurement of viscoelastic properties. She also develops time-resolving techniques for in situ study of stress-induced phase transitions of polymers and polymer crystallization using synchrotrone light sources and neutron scattering. She also studies the structure of heterogeneous catalyst systems used in Ziegler-Natta polymerization catalysis, the mechanisms which govern the formation of polymer gels, and the crystallization and polymorphic transformations of polymers in quiescent and nonquiescent conditions. She has extended her research interests to fundamental studies of self-assembly and confined crystallization in polyolefin block copolymers obtained using organometallic catalysts, for their potential in many advanced technologies including their use as template for integrated circuits, photonic crystals for the confinement of light, electronic and microfluidic application, sensing and bio-sensing. These studies have been lastly devoted at unveiling the structure/properties relationships of complex systems, such as polydisperse multiblock copolymers, developing original methods of analysis of the complex chain microstructure of these systems.

From 2018 to date she has been Coordinator of the Master Course "Science and Technology of Industrial Chemistry" at the University of Napoli Federico II. From 2004 to 2009 she has been Member of "Commissione di Tutorato", "Commissione Paritetica" and "Commissione Didattica", Faculty of Science MM.FF.NN., Università di Napoli Federico. From 2013 to date she is Member of the Accademic Board of PhD Course in Chemical Science, Università di Napoli Federico II. From 2017 to date, she is Scientific evaluator of PhD project for the Begian "Research Foundation – Flanders (FWO); Scientific evaluator of research proposals for the funding agencies H2020, within the FETOPEN RIA programs, the NATIONAL SCIENCE CENTRE (NSC, Poland), and the French National Research Agency (ANR, France). In 2016 and 2021 she has been referee of the national research programs "Progetti di Rilevanza Nazionale (PRIN" funded by MUR

She gave several key notes and/or plenary lectures, including: 1) XXXV Congresso nazionale dell'Associazione Italiana di Cristallografia, 18-21 Settembre 2006, Ferrara; 2) COST P12 Workshop, X-ray Studies of Polymer Crystallization, 23-25 October 2006, Oxfordshire, UK; 3) 41st IUPAC World Chemistry Congress "Chemistry Protecting Health, Natural Environment and Cultural Heritage" Torino, August 5-10, 2007; 4) XVth International Congress on Rheology, August 3-8, 2008 Monterey, CA; 5) Giornata di Studio e Approfondimento sulle bioplastiche e tecnologie ecocompatibili per imbottigliamento ed imballaggio delle acque minerali, 19 novembre 2008, Napoli; 6) XXXVIII Congresso nazionale dell'Associazione Italiana di Cristallografia, 20 - 23 September 2009; 7) International Workshop "Polymer Crystallization under Conditions Relevant to Processing" Genova, Italy, May 27- 28, 2010; 8) European workshop on polymer crystallization under conditions relevant to processing, Genova, June 21-22, 2012; 9) XLI Congresso nazionale dell'Associazione Italiana di Cristallografia, 11-14 Settembre 2012, Verona; 10) Solvay Conference "Macromolecules in Constrained Environment 24-29 March 2013, Les Houches, France; 11) Mipol 2018 14-15 February, Milano; 12) Mipol 2020 15-17 June, Milano; 13) APS March Meeting 2018, Boston; 14) Plenary lecture at European Polymer Congress 2019 (EPF 2019), 9-14 June, Crete.

Prof. Auriemma has been co-worker of Prof. Paolo Corradini since 1984, up to his decease in the 2006. Prof. Auriemma has established several national and international collaborations with outstanding scientists of Academy and Industry, namely Prof. Hans Wolfgang Spiess director of the Max-Planck-Institut für Polymer Forshung, Mainz, Germany, for solid state NMR analysis of the dynamics and local structure of polymers, Prof. Bernard Lotz at Institute Charles Sadron in Strasbourg, France for electron diffraction and microscopy of polymer single crystals; Prof. Geoffrey R. Mitchell at Department of Physics, University of Reading, Reading, UK for the studies on polymer crystallization in non quiescent conditions; Prof. Geoffrey W. Coates at the Department of Chemistry and Chemical Biology, Cornell University, Baker Lab, Ithaca, USA for the studies of stereoregular polymers prepared with metallorganic catalysts and new semicrystalline polymer from renewable resources; Dr. Luigi Resconi at Borealis, Linz, Austria for the studies of stereo- and regio-irregular polyolefins; prof. Gaetano Guerra at the University of Salerno for the study of chain conformation and crystal structure of solvent induced crystals and co-crystals of polymers; Martin van Duin, Arlanxeo, the Netherland, for fundamental studies of strain induced crystallization of advanced elastomers.

The studies performed by Prof. Auriemma to date have been largely funded by national research programs: and in particular:

A) PRIN 1998, 2000, 2002 and 2004 and Cluster C26 projects for the research projects concerning the study of the structure and physical properties of polymers produced with stereospecific metallorganic catalysts;

B) Regional programmes as Centro di Competenza "Nuove Tecnologie per le Attività Produttive" Regione Campania P.O.R. 2000-2006 Misura 3.16 for the projects concerning the study of the structure and viscoelastic properties of crystalline polymer gels;

C) Part of her researches is also funded by leader industries within collaborative projects namely: Basell Polyolefins for the studies of structure-properties relationships of new stereoregular polyolefins and the structure of Ziegler-Natta catalysts; Bridgestone for studies concerning the structural and physical properties of polymeric materials and inorganic compounds used as additive to improve the performances of composites for tires.

She has also scientific collaborations with Stmicroelectronics, BluPlast; Procter&Gamble; ITT Inc. Corporation; Unilever; COST P12 project "Structuring of Polymers" FP7 CSA project number 218331, "NaPolyNet - Setting up research-intensive clusters across the EU". Actually she has established an intensive collaboration with ARLANXEO, for the study of strain-induced-crystallization of high performance elastomers at fundamental level. She has been project leader of competitive scientific research projects including AXIA "New Polymeric Materials for the rigid and flexible packaging of food" (2009-2011); Faro Project on nanotechnologies (2013-2014); Cariplo project on crystalline elastomers (2014-2015).

Currently she is project leader of two projects funded by the Dutch Polymer Institute (DPI): 1) An Interdisciplinary high-throughput approach to olefin block copolymers (HT-OBC, DPI: Project #817)" (Project leader) and 2) DPI Project PO 2020-013; A microstructural insight in polyethylene based bioriented mono-materials: from fundamental to processing (PER-MANENT, DPI: Project PO 2020-013) (Applicant and Project Leader).

She participated to the INSTM consortium and to the European Network of Excellence NANOFUN-POLY. She organized a workshop within the AXIA project "New Paradigms in science and technology of food packaging"; She was Member of the Scientific Committee of: the final Congress for the COST P12 project "Structuring of Polymers"; FP7 CSA project number 218331, Pozzuoli, 2-4 March 2011; the Workshop "Natta's Seeds Grow.: "From the crystallography and modeling of stereoregular polymers to the challenges of complex systems", Milano, 21st-22nd November 2013; the Workshop "Recent advances and new perspectives in polymer crystallization", Genova, 29th-30th September 2014, Genova; the Congress Mipol 2021, 6th-8th July, 2021.