

Andrea Pucci, Ph.D.



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Background

Birthdate: March 23th, 1973
Place of Birth: Livorno (Italy)
Nationality: Italian
Marital Status: Married (2 sons)

Education

Ph.D., Chemistry (March 2003)

Department of Chemistry and Industrial Chemistry, University of Pisa, Italy
Academic advisor: Prof. Francesco Ciardelli (University of Pisa)
External examiner: Prof. Gerhard Wegner (Max Plank Institute, Mainz, Germany)
Thesis title: "Preparation of polyethylene blends with terthiophene derivatives and evaluation of the optical properties of their oriented films"

Master in Chemistry (July 1999)

Department of Chemistry and Industrial Chemistry, University of Pisa, Italy
1998-1999 Thesis in Chemistry: "Structure and optical properties of polyethylene films and terthiophene based chromophores". Final evaluation: 110/110 summa cum laude
Academic advisors: Prof. Francesco Ciardelli and Prof. Giancarlo Galli (University of Pisa)
1992-1997: Study of Organic Chemistry at the University of Pisa
1988-1992: Scientific High school in Livorno (Final evaluation: 58/60)

Positions & Experience

Research assistant, honorary Lecturer in Material Science (September 2005-present)

Department of Chemistry and Industrial Chemistry, University of Pisa, Italy

Research Advisor: Prof. Giacomo Ruggeri in the frame of the project Fp7 “BION: synthetic pathways to bio-inspired information processing” (<http://www.fp7-bion.eu/>) (2008-today);

Department of Chemistry and Industrial Chemistry, University of Pisa, Italy

Research Advisor: Prof. Francesco Ciardelli

- Co-responsible of the 2nd activity of the Italian MIUR-FIRB project Prot. N. RBNE03R78E on the dispersion of molecular sensors into polymers for smart and intelligent packaging applications (2005-2008).

Guest of the laboratory of Polymers and Biomaterials of the Faculty of Pharmacy of the University of Manchester, UK (July 2003, June 2004 and July 2007)

Research Advisors: Prof. Francesco Ciardelli, Dr. Nicola Tirelli

- Study of the morphology of gold and cadmium sulphide nanoparticles dispersed in ethylene copolymer based matrices

Post-Doc fellow in Material Science (April 2003-August 2005)

Italian Consortium for Science and Technology of Materials (INSTM), Pisa research unit

Department of Chemistry and Industrial Chemistry, University of Pisa, Italy

Research Advisor: Prof. Francesco Ciardelli

- Preparation and study of the properties of composite thermoplastic materials for optoelectronics, sensors and high mechanical performances

Research contract (September 2002-November 2002)

Centre of Molecular and Macromolecular Studies, Polish Academy of Science, Lodz, Poland

Research Advisor: Prof. Stanislaw Slomkowski

- Study of the UV-Vis radiation influence on the formation and degradation of (PEO)-b-(PG)-b-(PL) nanoparticles functionalized by azo-benzene chromophores”.

Guest of the laboratory of Biomedical Engineering at the ETH and University of Zurich, Zurich, Switzerland (February 2002-April 2002)

Research Advisors: Prof. Francesco Ciardelli, Dr. Nicola Tirelli

- Study of the orientation of UHMWPE films

Chemistry Graduate fellowship (September 1999-December 1999)

Department of Chemistry and Industrial Chemistry, University of Pisa, Italy

Research Advisor: Prof. Francesco Ciardelli

- Preparation of high dipole moment chromophores and their blends with polyethylenes with different linearity and molecular weight

Field of specialisation

- Field responsive materials based on thermoplastic macromolecules
- Ion conductive polymeric membranes for fuel cells applications
- Polymeric dispersants for lubricant oils

Honours, Awards, Membership of Professional Societies

- Journal Grant Award for International Authors of the Royal Society of Chemistry
- Member of the Società Chimica Italiana
- Member of the Associazione Italiana Macromolecole

Scientific Technical Coordination of research projects

Co-responsible of the 2nd activity of the Italian MIUR-FIRB project Prot. N. RBNE03R78E on the dispersion of molecular sensors into polymers for smart and intelligent packaging applications; Coordinator Prof. Francesco Ciardelli. Research project of the University of Pisa 2006 on the “Scienze e tecnologie dei nano/microsistemi”: “Health impact of metal nanoparticles: nanoparticles interaction with nucleic acids”; Coordinator Prof. Fernando Secco.

Industry-Research-projects: EniTecnologie (I), Acta nanotech SpA (I), Monteco (I).

Reviewer

Advanced Functional Materials, Advanced Materials, Journal of Materials Chemistry, Chemical Communication, Macromolecular Chemistry and Physics, Physical Chemistry Chemical Physics, Langmuir, Macromolecules.

Provided 20 Reviews during the past 12 months.

Teaching Experience

Contract Professor of the University of Pisa of the course “Applicazioni delle nanotecnologie: i nanocompositi” at the Department of Chemistry and Industrial Chemistry.

Research Advisor of Master Students

Filippo Donati: “DISPERSIONE DI SENSORI MOLECOLARI IN MATRICI POLIMERICHE” (DCCI, UNIPI 2006);

Elisabetta Elia: “Preparazione e caratterizzazione di materiali polistirenici per membrane a scambio anionico” (DCCI, UNIPI 2006).

Marco Faraj: “Preparazione e caratterizzazione di membrane a conduzione anionica a base di derivati polimerici dello stirene” (DCCI, UNIPI, 2009).

Publications

2001

1. Ciardelli F., Cellai C., Pucci A., Regoli L., Ruggeri G., Cardelli C., *Polym. Adv. Technol.* **2001**, *12*, 223; "Blends of Functionalized Terthiophenes with Polyethylene as Materials for New Linear Polarizers".
2. Tirelli N., Amabile S., Cellai C., Pucci A., Regoli L., Ruggeri G., Ciardelli F., *Macromolecules* **2001**, *34*, 2129; "New Terthiophene Derivatives for Ultra High Molecular Weight Polyethylene-Based Absorption Polarizers".

2002

3. Pucci A., Moretto L., Ruggeri G., Bronco S., *Polym. Adv. Technol.* **2002**, *13*, 737; "Effect of the Structure of the Polymer Matrix on the Terthiophene Chromophore Dispersion in Dichroic Polyethylenes Films".
4. Pucci A., Moretto L., Ruggeri G., Ciardelli F., *e-Polymers 2002*, no. **015**, <http://e-polymers.org>; "Effect of the dispersion of the chromophore on the optical performances of polarizers from polyethylene and 5''-thio-(3-butyl)nonyl-2,2':5',2''-terthiophene".

2003

5. Pucci A., Ruggeri G., Cardelli C., Conti G., *Macromol. Symp.* **2003**, *202*, 85; "Influence of Processing Method and Components Molecular Structure on the Phase behaviour of Polyethylenes/Dye Blends".
6. Pucci A., Elvati P., Ruggeri G., Liuzzo V., Tirelli N., Isola M., Ciardelli F., *Macromol. Symp.* **2003**, *204*, 59; "Molecularly controlled blending of metals and organic metals with polyolefins for the preparation of materials with modulated optical properties".

2004

7. A. Ambrosio, M. Alderighi, M. Labardi, L. Pardi, F. Fuso, M. Allegrini, S. Nannizzi, A. Pucci, G. Ruggeri, *Nanotechnology* **2004**, *15*, S270; "Near-field optical microscopy of polymer-based films with dispersed terthiophene chromophores for polariser applications".
8. A. Pucci, S. Nannizzi, G. Pescitelli, L. Di Bari, G. Ruggeri, *Macromol. Chem. Phys.* **2004**, *205*, 786; "Chiroptical properties of terthiophene chromophores dispersed in oriented and unoriented polyethylene films".
9. A. Pucci,* D. Lorenzi, M.-B. Coltelli, G. Polimeni, E. Passaglia, *J. Appl. Polym. Sci.*, **2004**, *94*, 372; "Controlled degradation by melt processing with oxygen or peroxide of Ethylene/Propylene copolymers".

10. P. P. Markowicz, M. Samoc, J. Cerne, P. N. Prasad, A. Pucci, G. Ruggeri, *Opt. Express*, **2004**, 12, 5209; “Modified Z-scan techniques for investigations of nonlinear chiroptic effects”.
11. A. Pucci, N. Tirelli, E. A. Willneff, S. L. M. Schroeder, F. Galembeck, G. Ruggeri, *J. Mater. Chem.*, **2004**, 14, 3495; “Evidence and Use of Metal-Chromophore Interactions: Luminescence Dichroism of Terthiophene-coated Gold Nanoparticles in Polyethylene Oriented Films”.

2005

12. A. Pucci, N. Tirelli, G. Ruggeri, F. Ciardelli, *Macromol. Chem. Phys.*, **2005**, 206, 102; “Absorption and emission dichroism of polyethylene films with molecularly dispersed push-pull terthiophenes”.
13. A. Pucci,* C. Barsocchi, R. Rausa, L. D’Elia, F. Ciardelli, *Polymer*, **2005**, 46, 1497; “Alder Ene Functionalization of Polyisobutene Oligomer and Styrene-Butadiene-Styrene Triblock Copolymer”.
14. S. Slomkowski, M. Gadzinowski, S. Sosnowski, C. De Vita, A. Pucci, F. Ciardelli, W. Jakubowski, K. Matyjaszewski, *Macromol. Symp.*, **2005**, 226, 239; “Biodegradable Nano- and Microparticles with Controlled Surface Properties”.
15. A. Pucci,* M. Bertoldo, S. Bronco, *Macromol. Rapid Commun.*, **2005**, 26, 1043; “Luminescent Bis-benzoxazolyl-stilbene as Molecular Probe for Polypropylene Films Deformation”.
(COVER PICTURE) – Device presented at the fair “expo del capitale umano e dell’innovazione”, Milan 15-18 of March 2006
16. A. Pucci,* T. Biver, G. Ruggeri, L. Itzel Meza, Y. Pang, *Polymer*, **2005**, 46, 11198-11205; “Luminescence Dichroism of Cyano-Containing Poly[(m-phenylene ethynylene)-alt-(p-phenylene ethynylene)] Aggregates Dispersed in Oriented Polyethylene”.
17. P. Biagioni, D. Polli, A. Pucci, G. Ruggeri, M. Labardi, G. Cerullo, M. Finazzi, L. Duò, *Appl. Phys. Lett.*, **2005**, 87, 223112; “Unexpected polarization behavior at the aperture of hollow-pyramid near-field probes”.
(Cited in the “Virtual Journal of Nanoscale Science & Technology” – December 5, 2005, Volume 12, Issue 23)

2006

18. F. Ciardelli, P. Pertici, G. Vitulli, S. Giaiacopi, G. Ruggeri, A. Pucci, *Macromol. Symp.*, **2006**, 231, 125-133; “Catalytic and Optical Behavior of Polymer Embedded Metal Nanoparticles”.
19. A. Pucci,* C. Cappelli, S. Bronco, G. Ruggeri, *J. Phys. Chem. B*, **2006**, 110, 3127-3134; “Dichroic Properties of Bis(benzoxazolyl)stilbene and Bis(benzoxazolyl)thiophene Dispersed into Oriented Polyethylene Films: A Combined Experimental and Density Functional Theory Approach”.

20. A. Pucci,* M. Bernabò, P. Elvati L. I. Meza, F. Galembeck, C. A. de Paula Leite, N. Tirelli, G. Ruggeri, *J. Mater. Chem.*, **2006**, *16*, 1058-1066; “Photoinduced Formation of Gold Nanoparticles into Vinyl Alcohol based Polymers”.
21. M. Boccia, V. Liuzzo, A. Pucci*, P. Narducci, G. Ruggeri, *Macromol. Symp.*, **2006**, *235*, 143-151; “Optical Properties of M(II) Schiff-base Complexes Dispersed in Ethylene based Polymers”.
22. S. Slomkowski, M. Gadzinowski, S. Sosnowski, I. Radomska-Galant, A. Pucci, C. De Vita, F. Ciardelli, *J. Nanosci. Nanotechnol.*, **2006**, *6*, 3242-3251; “Nanoparticles from polylactide and polyether block copolymers: formation, properties, encapsulation and release of pyrene – fluorescent model of hydrophobic drug”.

2007

23. A. Pucci, G. Ruggeri, S. Bronco, M. Bertoldo, C. Cappelli, F. Ciardelli. *Prog. Org. Coat.*, **2007**, *58*, 105; “Conferring Dichroic Properties and Optical Responsiveness to Polyolefins through Organic Chromophores and Metal Nanoparticles”.
24. A. Pucci*, F. Di Cuia, F. Signori, G. Ruggeri, *J. Mater. Chem.*, **2007**, *17*, 783; “Bis-benzoxazolyl-stilbene Excimers as Temperature and Deformation Sensors for Biodegradable Poly(1,4-butylene succinate) Films”. **Work cited on: Chem. Technol.**, **2007**, *4*, T17-T24: “intelligent wrappers”. **Device presented at the “science for food” exhibition in the occasion of the Science annual Festival in Genova, 26/10-07/11 2006.**
25. J. de la Venta, A. Pucci, E. Fernández-Pinel, M. A. García, C. De Julián, P. Crespo, G. Ruggeri, A. Hernando, *Adv. Mater.*, **2007**, *19*, 875; “Magnetism in polymers with Au nanoparticles”.

2008

26. F. Ciardelli, S. Coiai, E. Passaglia, A. Pucci, G. Ruggeri, *Polym. Int.*, **2008**, *57*; 805; “Reactive Blending of Polyolefins to Nanostructured Functional Thermoplastic Materials”.
27. M. Bernabò, F. Ciardelli, A. Pucci, G. Ruggeri, *Macromol. Symp.* **2008**, *270*, 177-186; “Preparation and Optical Properties of new Metal/Macromolecole Architectures”.
28. A. Pucci*, F. Donati, C. Cappelli, B. Mennucci, G. Ruggeri, *J. Phys. Chem. B*, **2008**, *112*, 3668-3679; “Modulation of the Optical Response of Polyethylene Films containing Luminescent Perylene Chromophores”.
29. A. Pucci*, R. Rausa, F. Ciardelli, *Macromol. Chem. Phys.* **2008**, *209*, 900-906; “Aggregation induced luminescence of polyisobutene succinic anhydrides and imides”. **Work cited on: Noteworthy Chemistry ACS Weekly Newsletter for June 16, 2008**, <http://listmailer1.acs.org/t/20621/11788487/11277/0/>.

30. M. Boccia, A. Pucci*, C. A. de Paula Leite, F. Galembeck, N. Tirelli, G. Ruggeri, *React. Funct. Polym.*, **2008**, 68; 1144; "Luminescent nanocomposites containing CdS nanoparticles dispersed into vinyl alcohol based polymers".

2009

31. A. Pucci*, F. Donati, G. Ruggeri, F. Ciardelli, *e-polymers*, **2009**, no. 058; "Linear Low Density Polyethylene (LLDPE) Films Containing Perylene Dyes as Stress-Strain Luminescent Indicators".
32. M. Bernabò, A. Pucci*, F. Galembeck, C. A. de Paula Leite, G. Ruggeri, *Macromol. Mat. Eng.*, **2009**, 294, 256-264; "Thermal- and Sun-Promoted Generation of Silver Nanoparticles Embedded into Poly(vinyl alcohol) Films".
33. F. Donati, A. Pucci*, L. Boggioni, I. Tritto, G. Ruggeri, *Macromol. Chem. Phys.*, **2009**, 210, 728-735; "New Cyclic Olefin Copolymer for the Preparation of Thermally Responsive Luminescent Films".
34. F. Donati, A. Pucci*, G. Ruggeri, *Physical Chemistry Chemical Physics*, **2009**, 11, 6276-6282; "Temperature and Chemical Environment Effects on the Aggregation Extent of Water Soluble Perylene Dye into Vinyl Alcohol Containing Polymers".
35. T. Berzina, A. Smerieri, M. Bernabo, A. Pucci, G. Ruggeri, V. Erokhin, M. P. Fontana, *J. Appl. Phys.* **2009**, 105(12), 124515/1-124515/5; "Optimization of an organic memristor as an adaptive memory element".
36. J. de la Venta, V. Bouzas, A. Pucci, M. A. Laguna-Marco, D. Haskel, S. G. E. te Velthuis, A. Hoffmann, J. Lal, M. Bleuel, G. Ruggeri, C. de Julián Fernández, and M. A. García, *J. Nanosci. Nanotechnol.* **2009**, 9, 6434; "X-ray Magnetic Circular Dichroism and Small Angle Neutron Scattering Studies of Thiol Capped Gold Nanoparticles".

Book Chapters

1. A. Pucci, V. Liuzzo, G. Ruggeri, F. Ciardelli, *New Polymeric Materials* (Eds. L. S. Korugic-Karasz, W. j. Macknight, E. Martuscelli) ACS Symposium series n° 916, **2005**; "Conferring smart behaviour to polyolefins through molecular blending with metal complexes", chapter 3, 18-33.
2. F. Ciardelli, O. Pieroni, S. Bronco, C. Cappelli, G. Ruggeri, A. Pucci, in *Functional Nanomaterials* (Eds. Kurt E. Geckeler and Ed. Rosenberg) American Scientific Publisher, **2006**. "Modulation of the Superstructure and Response of Macromolecules through Molecular Interactions and Nanodispersion", chapter 27, 435-442.
3. F. Ciardelli, S. Bronco, A. Pucci, "*Photoswitchable Polypeptides*" 2nd edition of "Molecular Switches" Editor(s): Ben L. Feringa, 2001, Wiley-VCH Verlag, GmbH, Weinheim (Germany), in progress.

4. A. Pucci, G. Ruggeri, F. Ciardelli, “*Optically Responsive Polymer Nanocomposites Containing Organic Functional Chromophores and Metal Nanostructures*” in K.E. Geckeler, H. Nishide (Eds.) *Advanced Nanomaterials*, Wiley-VCH Publishers, Weinheim (Germany), 2009 in progress.

Patents

1. R. Rausa, F. Ciardelli, L. D'Elia, A. Pucci, Italian patent MI2006A001476: “Procedimento per la preparazione di agenti acilanti polialchenilici”; July 2006.
2. P. Bert, F. Ciardelli, G. Liuzzo, A. Pucci, M. Ragnoli, A. Tampucci, Italian patent FI2007A000152: “Dispositivi elettrochimici contenenti membrane e ionomeri polimerici a scambio anionico”; July 2007.
3. R. Rausa, F. Ciardelli, L. D'Elia, A. Pucci, US 2008/002718 A1: “Process for the preparation of polyalkenyl acylating agents”; January 2008.
4. P. Bert, F. Ciardelli, G. Liuzzo, A. Pucci, M. Ragnoli, A. Tampucci, PCT Int. Appl. WO 2009/007922 A2:” Electrochemical devices containing anionic-exchange membranes and polymeric ionomeri”; January 2009.

Communication at congress

More than 60 communication at national and international conferences

Invited lectures

- International conference on “Advances in Polymer Science and Technology”, New Delhi, India (January **2008**). Title: “*Polyolefins and Polyester Molecular Composites with Optical Responsiveness to External Stimuli*”;
- 4th IUPAC-sponsored International Symposium on Macro- and Supramolecular Architectures and Materials (MAM-08): Practical Nano-Chemistry and Novel Approaches”, Dusseldorf, Germany (September **2008**). Title: “*OPTICALLY RESPONSIVE POLYMER NANOCOMPOSITES CONTAINING ORGANIC FUNCTIONAL CHROMOPHORES AND METAL NANOSTRUCTURES*”;
- International Symposium on Chiral Compounds and Special Polymers, Harbin, China (July **2009**). Title: “*Perylene Dyes as a New Class of Optical Indicators of Smart Thermoplastic Polymers*”;
- 4th International Workshop on Polymer/Metal Nanocomposites, Prague, Czech Republic (September **2009**). Title: “*Optical Properties of Polymer/Metal Nanocomposites and Application as Smart Materials*”

Hobbies

- Photography (<http://www.trekearth.com/members/apucci/>)
- Football, basketball

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