

# GRIGORIS MOUNTRICHAS

## PUBLICATIONS

May 2011

### A. Ph.D. THESIS

- 1) "Polymer based hybrid materials", Chemistry Department, University of Athens, Greece, (2/2008).

### B. CHAPTERS IN BOOKS

- 1) G. Mountrichas, S. Pispas

"Current Developments in Double Hydrophilic Block Copolymers"

"Polymer Aging, Stabilizers and Amphiphilic Block Copolymers", L. Segewicz and M. Petrowsky (Eds), Nova Science Publishers, Inc., 2010, Chapter 9.

- 2) A. Meristoudi, G. Mountrichas, S. Pispas

"Metal nanoparticle synthesis in block copolymer self-assembled nanostructures"

Encyclopedia of Nanoscience and Nanotechnology, H. S. Nalwa (Ed), American Scientific Publishers, 2010.

### C. PAPERS IN REFEREED JOURNALS

- 1) "Micelles of star block (PSPI)<sub>8</sub> and PSPI diblock copolymers (PS = polystyrene, PI = polyisoprene): structure and kinetics of micellization", G. Mountrichas, M. Mpiri and S. Pispas, *Macromolecules* 38, 940 (2005).
- 2) "Well-defined flexible polyelectrolytes with two cationic sites per monomeric unit", G. Mountrichas, C. Mantzaridis and S. Pispas, *Macromol. Rapid Commun.* 27, 289 (2006).
- 3) "Synthesis and pH responsive self-assembly of new double hydrophilic block copolymers", G. Mountrichas and S. Pispas, *Macromolecules* 39, 4767 (2006).

- 4) "Hybrid polymer/cobalt chloride humidity sensors based on optical diffraction", A. Tsigara, G. Mountrichas, K. Gatsouli, A. Nichelatti, S. Pispas, N. Madamopoulos, N. A. Vainos, H. L. Du and F. Roubani-Kalantzopoulou, *Sens. Actuators B* *120*, 481 (2007).
- 5) "Aqueous carbon nanotubes—amphiphilic block copolymer nanoensembles: towards realization of charge transfer processes with semiconductor quantum dots", G. Mountrichas, S. Pispas and N. Tagmatarchis, *Small* *3*, 404 (2007).
- 6) "Synthesis and solution behavior of carbon nanotubes decorated with amphiphilic block polyelectrolytes", G. Mountrichas, N. Tagmatarchis and S. Pispas, *J. Phys. Chem. B* *111*, 8369 (2007).
- 7) "Aqueous dispersions of C<sub>60</sub> fullerene by the use of amphiphilic block copolymers: preparation and non-linear optical properties", G. Mountrichas, S. Pispas, E. Xenogiannopoulou, P. Aloukos and S. Couris, *J. Phys. Chem. B* *111*, 4315 (2007).
- 8) "Grafting living polymers onto carbon nanohorns", G. Mountrichas, S. Pispas and N. Tagmatarchis, *Chem. Eur. J.* *13*, 7595 (2007).
- 9) "Novel double hydrophilic block copolymers based on poly(p-hydroxystyrene) derivatives and polyethylene oxide", G. Mountrichas and S. Pispas, *J. Polym. Sci., Part A: Polym. Chem.* *45*, 5790 (2007).
- 10) "pH-Dependent self-assembly of polystyrene-block-poly[(sulfamate-carboxylate)isoprene] copolymer in aqueous media", M. Uchman, K. Procházka, M. Štěpánek, G. Mountrichas, S. Pispas, M. Špírková and A. Walther, *Langmuir* *24*, 12017 (2008).
- 11) "Lithium ion induced nanophase ordering and ion mobility in ionic block copolymers", E. F. Ioannou, G. Mountrichas, S. Pispas, E. I. Kamitsosa and G. Floudas, *Macromolecules* *41*, 6183 (2008).
- 12) "Grafting-to approach for the functionalization of carbon nanotubes with polystyrene", G.

- Mountrichas, S. Pispas and N. Tagmatarchis, *Mater. Sci. Eng., B* 152, 40 (2008).
- 13) "Solubilization of carbon nanohorns by polyelectrolyte wrapping and templated formation of gold nanoparticles", G. Mountrichas, T. Ichihashi, S. Pispas, M. Yudasaka, S. Iijima and N. Tagmatarchis, *J. Phys. Chem. C* 113, 5444 (2009).
  - 14) "Functionalization of carbon nanohorns with polyethylene oxide: synthesis and incorporation in a polymer matrix", G. Mountrichas, N. Tagmatarchis and S. Pispas, *J. Nanosci. Nanotechnol.* 9, 3775 (2009).
  - 15) "Synthesis and magnetic properties of Fe<sub>3</sub>O<sub>4</sub> nanoparticles coated with biocompatible double hydrophilic block copolymer", G. Basina, G. Mountrichas, E. Devlin, N. Boukos, D. Niarchos, D. Petridis, S. Pispas and V. Tzitzios, *J. Nanosci. Nanotechnol.* 9, 4753 (2009).
  - 16) "Photoinduced electron transfer in aqueous carbon nanotubes/block copolymer/CdS hybrids: application in the construction of photoelectrochemical cells", G. Mountrichas, A. S. D. Sandanayaka, S. Economopoulos, S. Pispas, O. Ito, T. Hasobe and N. Tagmatarchis, *J. Mat. Chem.* 19, 8990 (2009).
  - 17) "Complexes between high charge density cationic polyelectrolytes and anionic single and double tail surfactants", C. Mantzaridis, G. Mountrichas and S. Pispas, *J. Phys. Chem. B* 113, 7064 (2009).
  - 18) "Neutron reflectivity study of free-end distribution in self-assembled polymer brushes", N. Spiliopoulos, Koutsoubas, D. Anastassopoulos, A. Vradis, C. Toprakcioglu, A. Menelle, G. Mountrichas and S. Pispas, *Macromolecules* 42, 6209 (2009).
  - 19) "Multicompartment nanoparticles formed by a heparin-mimicing block terpolymer in aqueous solutions", M. Uchman, M. Štěpánek, K. Procházka, G. Mountrichas, S. Pispas, I. K. Voets and A. Walther, *Macromolecules* 42, 5605 (2009).
  - 20) "Amphiphilic polystyrene-*b*-poly(*p*-hydroxystyrene-*g*-ethylene oxide) block-graft copolymers via a combination of conventional and metal-free anionic polymerization", J.P. Jao, G. Mountrichas, G.X. Zhang, S. Pispas, *Macromolecules* 42, 8661 (2009).

- 21) "Thermoresponsive core-shell brush copolymers with poly(propylene oxide)-block-poly(ethylene oxide) side chains via a "grafting from" technique", J.P. Jao, G. Mountrichas, G.X. Zhang, S. Pispas, *Macromolecules* *43*, 1771 (2010).
- 22) "Stable responsive diblock copolymer micelles for rheology control", E. van Ruymbeke, A. Pamvouxoglou, D. Vlassopoulos, G. Petekidis, G. Mountrichas, S. Pispas, *Soft Matter* *6*, 881 (2010).
- 23) "Self-assembled nanoparticles from a block polyelectrolyte in aqueous media: structural characterization by SANS", A. Papagiannopoulos, M. Karayianni, G. Mountrichas, S. Pispas, A. Radulescu, *J. Phys. Chem. B* *114*, 7482 (2010).
- 24) "Polymer covalent functionalization of carbon nanohorns using bulk free radical polymerization", G. Mountrichas, S. Pispas, T. Ichihashi, M. Yudasaka, S. Iijima, N. Tagmatarchis, *Chem. Eur. J.* *16*, 5927 (2010).
- 25) "Solution behavior of poly(sodium(sulfamate-carboxylate)isoprene), a pH sensitive and intrinsically hydrophobic polyelectrolyte", M. Karayianni, G. Mountrichas S. Pispas, *J. Phys. Chem. B.* *33*, 10748 (2010).
- 26) "Amphiphilic block copolymers by a combination of anionic polymerization and selective post-polymerization functionalization", E. Kaditi, G. Mountrichas, S. Pispas, *Eur. Polym. J.* *47*, 415 (2010).
- 27) "Template-free synthesis, growth mechanism and photoluminescent properties of Ln(OH)<sub>3</sub> and Ln<sub>2</sub>O<sub>3</sub> nanorods (Ln: lanthanide ion)", T. Xia, J. Wang, N. Lin, L. Huo, H. Zhao, G. Mountrichas, *J. Alloys Comp* *507*, 245 (2010).
- 28) "Orientation phenomena in chromophore DR1-containing polymer films and their non-linear optical response", D. Möncke, G. Mountrichas, S. Pispas, E.I. Kamitsos, V. Rodriguez, *Material Mater. Sci. Eng., B* *176*, 515 (2011).
- 29) "Polyelectrolyte - Surfactant Complexes Formed by Poly [3,5 – bis (trimethyl ammonium methyl) 4-hydroxystyrene iodide]-block-poly(ethylene oxide) and Sodium Dodecyl

Sulfate in Aqueous Solutions” M. Stepanek, P. Matejicek, K. Prochazka, S. K. Filippov, B. Angelov, M. Slouf, G. Mountrichas, S. Pispas, *Langmuir* 27, 5275 (2011).

- 30) “SHG and orientation phenomena in chromophore DR1-containing polymer films”, D. Möncke, G. Mountrichas, S. Pispas, E.I. Kamitsos, V. Rodriguez, submitted to *Photonics Nanostruct. Fundam. Appl.*

#### **D. PAPERS IN PROCEEDINGS OF INTERNATIONAL CONFERENCES**

- 1) “Stable aqueous dispersions of C<sub>60</sub> fullerene by the use of a block copolymer”, G. Mountrichas, S. Pispas, E. I. Kamitsos, E Xenogiannopoulou and S. Couris, *J. of Phys.: Conf. Series* 10, 163 (2005).
- 2) “Polymer based photonic sensors for physicochemical monitoring”, N. Madamopoulos, S. Pispas, L. Athanesakos, A. Tsigara, G. Mountrichas, K. Gatsouli, N. A. Vainos and K. Kibasi, *Proc. of SPIE* 5993, 599308 (2006).
- 3) “Light scattering study of well-defined flexible polyelectrolytes with two cationic sites per monomeric unit”, M. Osa, G. Mountrichas, K. Hong, S. Pispas, P. F. Britt and J. W. Mays, *Polym. Mat.: Sci. & Eng.* 97, 930 (2007).

#### **E. REVIEW ARTICLES**

- 1) “Methodologies for the chemical functionalization of carbon nanohorns”, G. Mountrichas, G. Pagona, G. Rotas, N. Karousis, S. Pispas and N. Tagmatarchis, *J. Nanostruct. Polym. and Nanocomp.* 4, 28 (2007).
- 2) “Properties, applications and functionalization of carbon nanohorns”, G. Pagona, G. Mountrichas, G. Rotas, N. Karousis, S. Pispas and N. Tagmatarchis, *Int. J. of Nanotech.* 6, 176 (2009).
- 3) “Amphiphilic block copolymers by a combination of anionic polymerization and selective post-polymerization functionalization”, E. Kaditi, G. Mountrichas, S. Pispas, submitted to *Eur. Polym. J.*

## F. ANNOUNCEMENTS IN CONFERENCES

(The presenter is denoted by the asterisk)

- 1) HUSC Conference “Colloids and Polymeric Assemblies near to and far from equilibrium” (Crete, June 2004)  
K. Gatsouli, G. Mountrichas, S. Pispas\*, “Non-Equilibrium Block Copolymer Based Aggregates as Intermediates to Organic-Inorganic Hybrid Materials”, poster
- 2) Laser Olympics 2004 (Athens, Greece, October 2004)  
N. Madamopoulos\*, A. Tsigara, G. Mountrichas, G. Manasis, J. Giahos, A. Nichellati, G. Mousdis, S. Pispas, N. A. Vainos, “Photonic Humidity Sensor Using Nanocomposite Materials”, poster.
- 3) 2<sup>nd</sup> conference on Microelectronics Microsystems and Nanotechnology, (Athens, November 2004)  
G. Mountrichas\*, S. Pispas, “Poly(hydroxystyrene-b-methacrylic acid) Double Hydrophilic Block Copolymers: Synthesis and pH Sensitive Self-Organization in Solution.”, poster
- 4) 2<sup>nd</sup> conference on Microelectronics Microsystems and Nanotechnology, (Athens, November 2004)  
G. Mountrichas\*, S. Pispas, E. I. Kamitsos, E. Xenogiannopoulou, S. Couris, “Stable Aqueous Dispersions of C60 Fullerene by the Use of a Block Copolymer”, poster
- 5) E-MRS Fall Meeting, Symposium A (Warsaw, Poland, November 2004)  
P. Aloukos, E. Xenogiannopoulou, S. Couris, \* G. Mountrichas, S. Pispas, N. Vainos, “Nonlinear Optical Properties of Stable Aqueous Dispersions of C60 by the Use of a Block Copolymer”, poster
- 6) The 2<sup>nd</sup> International Conference on Nanomaterials and Nanotechnologies (Crete June 2005)  
G. Mountrichas, S. Pispas\*, E. I. Kamitsos, “Nanoscale pH Responsive Block Copolymer Micelles with Potential Use in Water Purification Methodologies”, poster
- 7) Conference on Lasers and Electro-optics, CLEO/Europe (Munich, Germany, June 2005)  
A. Tsigara\*, G. Mountrichas, G. Mousdis, S. Pispas, N. Madamopoulos, N. Vainos, “Photonic Humidity Integrated Sensor Based on Hybrid Polymer/Cobalt Chloride

- Systems”, poster.
- 8) Conference on Lasers and Electro-optics, CLEO/Europe (Munich, Germany, June 2005)  
A. Tsigara\*, G. Mountrichas, G. Mousdis, S. Pispas, N. Madamopoulos, N. Vainos,  
“Photonic Humidity Integrated Sensor Based on Hybrid Polymer/Cobalt Chloride  
Systems”, poster.
  - 9) OpticsEast “Sensors and Photonics for Applications in Industry, Life Science and  
Communications” ( Boston, USA, October 2005)  
N. Madamopoulos\*, S. Pispas, L. Athanesakos, A. Tsigara, G. Mountrichas, K. Gatsouli,  
N. A. Vainos, K. Kibasi, “Polymer Based Photonic Sensors for Physicochemical  
Monitoring”, oral
  - 10) 45<sup>th</sup> Microsymposium “Structure and dynamics of self-organized macromolecular  
systems” (Prague, Czech Republic, July 2006)  
G. Mountrichas, S. Pispas\*, “Novel Double Hydrophilic Block Copolymers via Anionic  
Polymerization: Self-Assembly and Complexes with Biomacromolecules”, oral
  - 11) International Conference on Synthetic Metal (Dublin, July 2006)  
G. Mountrichas\*, N. Tagmatarchis, S. Pispas, “Intramolecular Electronic Interactions On  
Soluble Carbon Nanotubes/Semiconductor Nanoparticles Ensembles”, poster.
  - 12) \*3<sup>rd</sup> Workshop on Nanoscience and Nanotechnologies (Thessaloniki, July 2006)  
G. Mountrichas\*, N. Tagmatarchis, S. Pispas, “Polymer Decorated Carbon Nanotubes  
Templating the Growth of CdS Nanoparticles: Towards Intramolecular Charge Transfer  
Processes”, poster. (Young Scientist Poster Award)
  - 13) 9<sup>th</sup> European Symposium on Thermal Analysis and Calorimetry (Poland, August 2006)  
C. Vasilaki, G. Mountrichas, C. Matsingou, S. Pispas, C. Demetzos\*, “Design and  
Develop of Steritically Stabilized Liposomes Based on Polymer Interactions with DPPC  
Membrane Bilayers. A DSC Study”, poster
  - 14) 6<sup>th</sup> International Symposium on Polyelectrolytes (Dresden, September 2006)  
G. Mountrichas\*, S. Pispas, N. Tagmatarchis, “Solubilization of Carbon Nanotubes in  
Water Using Amphiphilic Block Polyelectrolytes”, poster.
  - 15) 6<sup>th</sup> Panhellenic Conference on Polymers (Patra, November 2006)  
G. Mountrichas\*, S. Pispas, “Synthesis of pH Responsive Double Hydrophilic Block

- Copolymers”, poster.
- 16) 6<sup>th</sup> Panhellenic Conference on Polymers (Patra, November 2006)  
C. Mantzaridis, \* G. Mountrichas, S. Pispas “Novel High Charge Cationic Polyelectrolytes and their Complexes with Oppositely Charged Surfactants”, poster.
  - 17) 6<sup>th</sup> Panhellenic Conference on Polymers (Patra, November 2006)  
E. Ioannou, \* G. Mountrichas, S. Pispas, E. I. Kamitsos, P. Papadopoulos, G. Floudas, “Structure and Dynamics of Lithium Naturalized Ionic Block Copolymers”, poster.
  - 18) 9<sup>th</sup> Greece-Cyprus Conference in Chemistry (Larnaka, April 2007)  
G. Mountrichas, \* S. Pispas, N. Tagmatarchis, “Polymer and Carbon Nanostructures: Advanced Hybrid Materials Toward Nanotechnological Applications”, oral.
  - 19) 2nd Hellenic Symposium on Organic Synthesis, (Athens, April 2007)  
G. Mountrichas, \* S. Pispas, N. Tagmatarchis, “Hybrid Materials Based on Polymers and Carbon Nanostructures”, poster.
  - 20) NanoSmat2007, International Conference on Surface, Coatings and Nanostructured Materials (Algarve, Portugal, July 2007)  
G. Mountrichas, \* N. Tagmatarchis, S. Pispas, “Functionalization of Carbon Nanohorns with Polyethylene Oxide”, poster.
  - 21) EPF 2007, European Polymer Congress (Portoroz, Slovenia, July, 2007)  
M. Uchman, \* M. Stepanek, K. Prochazka, M. Spirakova, M. Urbanova, G. Mountrichas, S. Pispas, "Self-assembly of Multifunctional Block Polyelectrolytes in Aqueous Solutions”, poster.
  - 22) NN07, 4th Workshop on Nanosciences and Nanotechnologies (Thessaloniki, Greece, July, 2007)  
G. Mountrichas, \* S. Pispas, N. Tagmatarchis, “Synthesis and Applications of Polymer Functionalized Carbon Nanostructures”, oral.
  - 23) 234th ACS National Meeting, Polymeric Materials Science & Engineering Division, (Boston, USA, August, 2007)  
M. Osa, \* G. Mountrichas, K. Hong, S. Pispas, P.F. Britt, J.W. Mays, “Light Scattering Study of Well-Defined Flexible Polyelectrolytes with Two Cationic Sites per Monomeric Unit”, poster.

- 24) ICSAM 2007, International Conference on Structural Analysis of Advanced materials (Patra, September 2007)  
G. Mountrichas,\* N. Tagmatarchis, S. Pispas, “Advanced Hybrid Materials of Carbon Nanostructures and Polymers”, oral.
- 25) XXIII Hellenic Conference on Solid State Physics and Materials Science (Athens, Greece, September, 2007)  
G. Mountrichas,\* S. Pispas, N. Tagmatarchis, “Polymer Based Hybrid Materials: Synthesis and Applications of Materials Containing Carbon Nanostructures”, poster.
- 26) XXIII Hellenic Conference on Solid State Physics and Materials Science (Athens, Greece, September, 2007)  
A. Pamvouxoglou,\* E. Van Ruymbeke, G. Petekidis, D. Vlassopoulos, G. Mountrichas, S. Pispas, “Viscoelastic Response of Micelles with Chemically Cross-Linked Cores”, oral.
- 27) ISPAC 2007, 20th International Symposium on Polymer Analysis and Characterization (Crete, Greece, September, 2007)  
G. Mountrichas,\* S. Pispas, N. Tagmatarchis, “Solubilization of Carbon Nanostructures in Organic and Aqueous Media by Decoration with Polymers”, poster.
- 28) ISPAC 2007, 20th International Symposium on Polymer Analysis and Characterization (Agios Nikolaos, Crete, Greece, September, 2007)  
G. Mountrichas,\* S. Pispas, “Solution Properties of Novel Double Hydrophilic Block Copolymers Based on poly(p-hydroxystyrene) Derivatives and poly(ethylene oxide)”, poster.
- 29) International Symposium on Nanomedicine (Chalkidiki, Greece, September, 2007)  
T. S. Levchenko, G. Mountrichas, V. P. Torchilin, S. Pispas\*, “Poly(isoprene-b-ethylene oxide) Block Copolymer Micelles as Nanocarriers for Poorly Water Soluble Drugs”, poster.
- 30) ECIS 2007, 21st Conference of the European Colloid and Interface Society (Geneva, Switzerland, September, 2007)  
M. Uchman,\* M. Stepanek, K. Prochazka, M. Spirkova, M. Urbanova, G. Mountrichas, S. Pispas, “Novel Multifunction Block Polyelectrolytes in Aqueous Solutions and on Surface”, poster.

- 31) The Society of Rheology 79th Annual Meeting (Salt Lake City, USA, October, 2007)  
E. Van Ruymbeke,\* A. Pamvouksoglou, D. Vlassopoulos, G. Petekidis, G. Mountrichas,  
S. Pispas, “Rheological Properties of Stable Responsive Block Copolymer Micelles”,  
oral.
- 32) Micro & Nano 2007, 3<sup>rd</sup> International Conference on Microelectronics, Microsystems and  
Nanotechnology (Athens, Greece, November, 2007)  
G. Mountrichas,\* N. Tagmatarchis, S. Pispas, “Covalent and Non-Covalent  
Functionalization of Carbon Nanotubes and Carbon Nanohorns with Polymers”, poster.
- 33) 3rd Hellenic Conference on Thermal Analysis (Athens, Greece, December, 2007)  
G. Mountrichas, N. Tagmatarchis, S. Pispas\*, “Thermogravimetric Analysis for the  
Characterization of Hybrid Materials Based on Polymers and Carbon Nanostructures”,  
poster.
- 34) 3rd Hellenic Conference on Thermal Analysis (Athens, Greece, December, 2007)  
G. Mountrichas, M. Talelli, G. D. Chryssikos, V. Gionis, C. Eforakopoulou, S. Pispas\*,  
“Qualitative and Quantitative Analysis of Aramide Fibers Using Thermal Analysis and  
Vibrational Spectroscopy”, poster.
- 35) \*PPC10, Pacific Polymer Conference (Kobe, Japan, December, 2007)  
M. Uchman,\* K. Prochazka, G. Mountrichas, S. Pispas, “Multifunctional Polyelectrolyte  
Triblock Copolymers in Aqueous Solution and CdS Quantum Dots Templated on  
Copolymer Nanoparticles”, poster. (Young Scientist Poster Award)
- 36) First International Conference on Multifunctional, Hybrid and Nanomaterials (Tours,  
France, March 2009)  
G. Mountrichas\*, N. Tagmatarchis, S. Pispas, “Covalent and Non-Covalent  
Functionalization of Carbon Nanohorns with Polymers”, oral.
- 37) ESOF 2010, Euroscience Open Forum 2010 (Torino, Italy, July, 2010)  
G. Mountrichas,\* “Amorphous Materials with Non-Linear Optical Properties”, poster.