



Curriculum Vitae

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Scientific fields of interest

- Organic chemistry
- Organic Free radicals
- Main-group organometallic chemistry
- Dendrimers
- **Non-conventional techniques** in organic synthesis
(**Ultrasound, Microwaves**)

Current Research:

Chemistry in High-Energy Microenvironments

Use of Non-conventional techniques (ultrasound, microwaves) in the synthesis of fine chemicals. These studies concern the application of High-Intensity Ultrasound (HIU) and Microwaves (MW) to the synthesis of fine chemicals. In the last decade these new energy sources have been increasingly exploited in organic synthesis because they can bring reactions to completion in minutes rather than hours or days. They can also induce reactions that would otherwise be very laborious and can bring out peculiar chemoselectivities and open up new synthetic pathways. Although the application domains of HIU and MW do not overlap, they both have great potential towards developing environment-friendly synthetic methods.

Other Activities

- Greek representative in COST Action D32 "Chemistry in High-Energy Microenvironments" (2004-2008)
- Associate Editor, *Chemical Papers* (1998-1999). Institute of Chemistry, Slovak Academy of Sciences, Versita and Springer verlag.
- Member of the Editorial Advisory Board, *Chemical Papers* (2010-). Institute of Chemistry, Slovak Academy of Sciences, Versita and Springer verlag.
- Guest Editor, *Current Organic Chemistry*. Ειδικό τεύχος με τίτλο "Organic Chemistry with Microwaves and Ultrasound" (to be published in 2011).

Membership of Scientific Societies

Member of the Association of Greek Chemists
Member of the Association of Greek Researchers

Participation in European Programmes

"Desertification of the Aegean", 1987-1991.

"Conjugated Ladder-Type Oligomers and Polymers Containing Fused Six- and five-Membered Rings." **Human Capital and Mobility Network** (1/9/93-1/12/96).

"Simple and Mixed Metal Alkyls, Alkoxides and Amides in Synthesis and Catalysis, and as Precursors for New Ceramic and Polymeric Materials" **Human Capital and Mobility Network** (1/12/93-31/3/97).

"Design, Synthesis and Study of Novel Non-linear Optical Materials" - **Training and Mobility of Researchers Network** (1/10/96-30/9/99).

"Microwave and high-intensity ultrasound in the synthesis of fine chemicals", **COST D32**, (2004-2008).

"Solid Phase Phospholipid and Dendrimer Synthesis" (SOPHOLIDES), (**Marie Curie Host Fellowships for the Transfer of Knowledge**), Contr. Numb. MTKD-CT-2004-014399), 2005-2009.

"A European Research Training Site for the Design and Synthesis of Novel Neuroprotective and Hypoglycemic Agents through a Multi-disciplinary Approach", (EURODESYS), **Marie Curie Actions, Structuring the European Research Area**, 2006-2010.

"Advancement of Research Capability for the Development of New Functional Compounds", (ARCADE), **FP7-2009-REGPOT-1**, (2010-2012)

Publications

C.G. Screttas and **G. A. Heropoulos**, *Tetrahedron* **40**, 275-5279, **1984**.
"A Question concerning the pK range within which an organic free radical exhibits normal radical behaviour. The case of Galvinoxyl."

C.G. Screttas and **G. A. Heropoulos**, *Magn. Reson. Chem.* **28**, 878-882, **1990**.
"Molar Paramagnetic Solvent NMR Shifts of Galvinoxyl in Toluene. Kinetics of the Reaction Between Galvinoxyl and Tertiary Amines at High Radical Concentrations."

G-J. M. Gruter, G. P. M. van Klink, **G. A. Heropoulos**, O. S. Akkerman and F. Bickelhaupt, *Organometallics*, **10**, 2535-2536, **1991**.
"Activation of Organomagnesium Reagents by Crown Ethers. Unusual Ether Cleavage of (2-Methoxy-1,3-xylene)-15-crown-4."

C.G. Screttas and **G. A. Heropoulos**, *J. Polym. Sci., Part A: Polym. Chem.* **30**, 1771-1773, **1992**.

"Kinetic-Thermodynamic Evidence for the Involvement of SET steps in the Anionic Polymerization of Styrenes."

C.G.Screttas and **G. A. Heropoulos**, *J. Org. Chem.* **58**, 1794-1799, **1993**
"Spectroscopic Electronegativities of Alkyl Groups. A Method for Estimating Ionization Potentials of Di- and Triradicals."

C.G. Screttas and **G. A. Heropoulos**, *J. Org. Chem.* **58**, 3654-3659, **1993**.
"Transferability-Additivity of Molar Volumes of Organic Liquids and Their Relation to Normal Boiling Points."

C.G.Screttas and **G. A. Heropoulos**, *J. Mol. Struct.*, **303**, 149-153, **1994**.
"Correlating Thermochemical Data with Molar Volumes. Toward Defining Chemical Space."

C.G.Screttas, **G. A. Heropoulos** and B.R. Steele, *J. Chem. Soc., Faraday Trans.*, 1717-1719, **1996**.

"Deviation from Trouton's rule and a method for converting a non-constitutive molecular parameter into a constitutive one."

C.G. Screttas, **G. A. Heropoulos**, B.R. Steele and D. Bethell, *Magn. Reson. Chem.*, **36**, 656-662, **1998**.

"Phosphorus-31 contact shifts as a measure of weak ligand affinities. Interaction between alkali metal fluorenone radical anions and certain phosphorus (III or IV) ligands."

M. Micha-Screttas, **G. A. Heropoulos** and Barry R. Steele, *J. Chem. Soc., Perkin Trans. 2*, **7**, 1443-1446, **1999**.

"Evidence for a Concentration Dependent $^{6(7)}\text{Li}$ NMR Contact Shift in Tetrahydrofuran Solutions of Lithium Naphthalene Radical Anion and the Effect of Added $^{6(7)}\text{LiCl}$ "

C.S. Salteris, I.D. Kostas, M.Micha-Screttas, **G. A. Heropoulos**, C.G. Screttas, A. Terzis, *J. Org. Chem* **64** (15), 5589-5592, **1999**.

"ortho-Directed Lithiation of ω -Phenoxyalcohols"

C.S. Salteris, I.D. Kostas, M.Micha-Screttas, **G. A. Heropoulos**, C.G. Screttas, A. Terzis, *Main Group Met. Chem.* **22**(7), 427-434, **1999**.

"ortho-Directed Lithiation of ω -Phenoxyalkanethiols and N,N-Dimethyl, ω -Phenoxyalkaneamines. Crystal Structure of Bis[o[(dimethylamino)ethoxy]phenyl]mercury"

C.S. Salteris, I.D. Kostas, M.Micha-Screttas, B.R. Steele, **G. A. Heropoulos**, C.G. Screttas, A. Terzis, *J. Organomet. Chem.*, **590**, 63-70, **1999**.

"Synthesis of lithium ω -(m- and p-lithiophenoxy)alkoxides modified with magnesium 2-ethoxyethoxide. Crystal structures of bis[4-(2-hydroxyethoxy)phenyl]mercury and bis[4-(3-hydroxypropoxy)phenyl]mercury"

M. Micha-Screttas, **G. A. Heropoulos**, B.R. Steele, *J. Chem. Soc., Perkin Trans. 2*, 12, 2685-2690, **1999**.

"Interaction between alkali metal aromatic ketone radical anions and the chlorides of lithium and magnesium in solution. A case of a carbon-carbon bond strengthening through complex formation"

M. Micha-Screttas, **G. A. Heropoulos** and B.R. Steele, *Magn. Reson. Chem.*, 39, 586-592, **2001**.

"Structural changes in concentrated solutions of alkali metal monosubstituted benzophenone radical anions in pure and mixed solvents"

M. Micha-Screttas, C.G. Screttas, B.R. Steele and **G. A. Heropoulos**, *Tetrahedron Lett.* 43 (27), 4871-4873, **2002**.

"Chemical and physical evidence for metal-metal interchange between lithium alkoxides and dibutylmagnesium"

D.P. Catsoulacos, B.R. Steele, **G. A. Heropoulos**, M. Micha-Screttas, and C.G. Screttas, *Tetrahedron Lett.* 44 (24), 4575-4578, **2003**.

"An imino-phosphine dendrimeric ligand and its evaluation in the Heck reaction"

C.G. Screttas, **G. A. Heropoulos**, M. Micha-Screttas, B.R. Steele and D.P. Catsoulacos, *Tetrahedron Lett.* 44 (30), 5633-5635, **2003**.

"Reductive lithiation of alkyl phenyl sulfides in diethyl ether. A ready access to α,α -dialkylbenzylolithiums"

G. A. Heropoulos, S. Georgakopoulos and B. R. Steele, *Tetrahedron Lett.* 46, (14), 2469-2473, **2005**.

"High intensity ultrasound-assisted reduction of sterically demanding nitroaromatics"

C. Arbez-Gindre, B. R. Steele, **G. A. Heropoulos**, C. G. Screttas, J.E Communal, W. J. Blau and I. Ledoux-Rak, *J. Organomet. Chem.*, 690 (6), 1620-1626, **2005**.

"A facile organolithium route to ferrocene-based triarylmethyl dyes with substantial near IR and NLO properties"

S. Mastronicolis, N. Arvanitis, A. Karaliota, C. Litos, G. Stavroulakis, H. Moustaka, A. Tsakirakis and **G. A. Heropoulos**, *Food Microbiol.* 22 (2-3), 213-219, **2005**.

"Cold dependence of fatty acid profile of different lipid structures of *Listeria monocytogenes*"

C. G. Screttas, **G. A. Heropoulos**, M. Micha-Screttas and B. R. Steele, *Tetrahedron Lett.* 46 (25), 4357-4360, **2005**.

"Medium dependent lithiated side products in the reductive lithiation of allylic phenylthioethers. Diethyl ether versus tetrahydrofuran"

S.K, Mastronicolis, A. Boura, A. Karaliota, P. Magiatis, N. Arvanitis, C. Litos, A. Tsakirakis, P. Paraskevas, H. Moustaka and **G. A. Heropoulos**, *Food Microbiol.* 23, 184-194, **2006**.

"Effect of cold temperature on the composition of different lipid classes of the foodborne pathogen *Listeria monocytogenes*: Focus on neutral lipids"

G. Cravotto, L. Boffa, M. Bia, W. Bonrath, M. Curini and **G. A. Heropoulos**, *SynLett*, 2605-2609, **2006**.

"An Easy Access to Aromatic Azo Compounds under Ultrasound/Microwave Irradiation"

I. D. Kostas, **G. A. Heropoulos**, D. Kovala-Demertzi, P. N. Yadav, J. P. Jasinski, M. A. Demertzis, F. J. Andreadaki, G. Vo-Thanh, A. Petit and A. Loupy, *Tetrahedron Lett.* **47**, (26), 4403-4407, **2006**.

"Microwave-promoted Suzuki-Miyaura cross-coupling of aryl halides with phenylboronic acid under aerobic conditions catalyzed by a new palladium complex with a thiosemicarbazone ligand"

G. A. Heropoulos, G. Cravotto, C. G. Screttas and B. R. Steele, *Tetrahedron Lett.* **48**, (18), 3247-3250, **2007**.

"Contrasting chemoselectivities in the ultrasound and microwave assisted bromination reactions of substituted alkylaromatics with *N*-bromosuccinimide"

B. R. Steele, **G. A. Heropoulos** and C. G. Screttas, *Collect. Czech. Chem. Commun.* **72**, 5-6, 589-598, **2007**.

"Metal chloride reductions with aromatic radical anions. The magnesium chloride catalysed cleavage of tetrahydrofuran by sodium naphthalene radical anion"

F. Wiesbrock, C. Patteux, T. K. Olszewski, A. Blanrue, **G. A. Heropoulos**, B. R. Steele, M. Micha-Screttas, and T. Calogeropoulou. *Eur. J. Org. Chem.* 4344-4349, **2008**.

"Solution-Phase Synthesis of First-Generation Tetraester Dendritic Branches Involving Microwave and/or Ultrasonic Irradiation"

S. K. Mastronicolis, N. Arvanitis, A. Karaliota, P. Magiatis, **G. A. Heropoulos**, C. Litos, H. Moustaka, A. Tsakirakis, E. Paramera, and P. Papastavrou.

Appl. Envir. Microbiol. **74**, 4543-4549, **2008**.

"Coordinated Regulation of Cold-Induced Changes in Fatty Acids with Cardiolipin and Phosphatidylglycerol Composition among Phospholipid Species for the Food Pathogen *Listeria monocytogenes*"

S. Aime, E. Gianolio, F. Arena, A. Barge, K. Martina, **G. A. Heropoulos** and G. Cravotto.

Org. Biomol. Chem., **7**, (2), 370-379, **2009**.

"New cyclodextrin dimers and trimers capable of forming supramolecular adducts with shape-specific ligands".

M. Bucos, C. Villalonga-Barber, M. Micha-Screttas, B. R. Steele, C. G. Screttas and **G. A. Heropoulos**, *Tetrahedron* **66**, 2061-2065, **2010**.

"Microwave Assisted Solid Additive Effects in Simple Dry Chlorination Reactions with *N*-Chlorosuccinimide".

International Conferences (2000-2010)

M. Micha –Screttas, **G. A. Heropoulos** and B.R. Steele, *XIX ICOMC, Shanghai, China, July 23-28, 2000.*

“Effect of additives such as salts and co-solvent on the structure of alkali metal aromatic ketone radical anions in solution”.

G. A. Heropoulos, M. Micha –Screttas, B.R. Steele and C. Screttas, *XIX ICOMC, Shanghai, China, July 23-28, 2000.*

“Metalation of (methylaryl)phosphines and phosphine oxides and their transformation to useful ligands for transition metal catalysis”.

C. Arbez-Gindre, B. R. Steele, **G. A. Heropoulos**, C. G. Screttas, J.-E. Communal, M. in Het Panhuis, W. Blau and I. Ledoux-Rak, *6th FIGIPS Meeting in Inorganic Chemistry, Barcelona, July 2001.*

“An organolithium route to triarylmethyl dyes bearing ferrocenyl or ferrocenylethenyl groups and their NLO properties”.

M. Micha-Screttas, C.G. Screttas, B. R. Steele and **G. A. Heropoulos**, *6th FIGIPS Meeting in Inorganic Chemistry, Barcelona, July 2001.*

“Chemical and physical evidence for metal-metal interchange between lithium ⁶Li-alkoxyethoxide and dibutylmagnesium”.

B.R. Steele, C.G. Screttas, M. Micha-Screttas, **G. A. Heropoulos** and I.D. Kostas, *XXIIIrd Poland-German Colloquy on Organometallic Chemistry, Wierzba, Poland, April, 2003.*

“Modification of reactivity of main group organometallics”.

G. A. Heropoulos, C.G. Screttas, Maria Micha-Screttas, B.R. Steele and D.P. Catsoulacos, *XVth FEChem Conference 2003, Zurich, August 10th -15th, 2003.*

“Reductive Lithiations in Diethyl Ether: Preparation of Benzylic Organolithium Reagents”.

B.R. Steele, D.P. Catsoulacos, **G. A. Heropoulos**, M. Micha-Screttas and C.G. Screttas, *XVth FEChem Conference on Organometallic Chemistry, Zurich, Switzerland, August, 2003.*

“Synthesis and characterisation of an imino-phosphine dendrimeric ligand and its application in the Heck reaction”.

D.P. Catsoulacos, B.R. Steele, **G. A. Heropoulos**, M. Micha-Screttas and C.G. Screttas, *3rd International Dendrimer Symposium, Berlin, Germany, September, 2003.*

“An imino-phosphine dendrimeric ligand and its evaluation in the Heck reaction”.

G. A. Heropoulos, B.R. Steele, I.D. Kostas, S. Georgakopoulos, M. Micha-Screttas and C.G. Screttas, *COST D32, 1st Workshop on Chemistry in High-Energy Microenvironments, Alicante, Spain, 8-9 July 2004.*

“Ultrasound assisted reduction of nitroaromatic molecules of high steric demand”.

C.G. Screttas, **G. A. Heropoulos**, B.R. Steele and M. Micha-Screttas, *15th International Conference on Organic Synthesis, Nagoya, Japan, August 2004*.
"Reductive lithiation allylic phenylthioethers in diethyl ether: a remarkable solvent effect".

G. A. Heropoulos, Spyros Georgakopoulos, M. Micha-Screttas, Barry R. Steele.

COST D32 (w.g. 06 and w.g 03), and COST D30 (w.g. 03), Workshop in New Synthetic Applications of High-Intensity Ultrasound and Microwave and High Pressure Environment, Torino, Italy, 18-19 February 2005.

"High Intensity ultrasound assisted reactions of organic molecules".

G. A. Heropoulos, I. D. Kostas, D. Kovala-Demertzi, and A. Loupy, *COST D32 Working Group Meeting, Hambourg (DE), στα πλαίσια του "European Sonochemistry Society - ESS 10" meeting, 7-8 June 2006*.

"Microwave-promoted Suzuki-Miyaura cross-coupling of aryl halides with phenylboronic acid under aerobic conditions catalyzed by a new palladium complex with a thiosemicarbazone ligand".

G. A. Heropoulos, I. D. Kostas, André Loupy, D. Kovala-Demertzi, *16th International Conference on Organic Synthesis (IUPAC ICOS-16), Book of Abstracts, Paper No. ICOS-244, p. 225, Merida, Mexico, 11-15 June 2006*.

"Microwave-assisted Suzuki-Miyaura reaction catalyzed by a new palladium complex"

G. A. Heropoulos, C. G. Screttas and B. R. Steele

Joint WG 06 & WG 08 Meeting of Action COST D32 "New perspectives for synthetic application of power ultrasound and microwave in the laboratory and industry" DSM, Kaiseraugst, Switzerland, 2 February 2007.

"Diverse chemoselectivities in ultrasound and microwave assisted simple bromination reactions".

C. Patteux, T.K. Olszewski, B.R. Steele, **G. A. Heropoulos**, M. Micha-Screttas,, *International Dendrimer Symposium 5, Toulouse, France, August 2007*.

"Dendrimer modified solid phase supports"

T. K. Olszewski, C. Patteux, B. R. Steele, **G. A. Heropoulos**, M. Micha-Screttas, *International Dendrimer Symposium 5, Toulouse, France, August 2007*.

"Solution phase synthesis of a polyether dendron and its immobilisation on a solid-phase support"

G. Cravotto, K. Martina, N. Chiambretti, A. Barge, **G. A. Heropoulos**, "Sopholidés" *Mid-Term Workshop, Athens 5-7 December 2007*.

"Efficient, regioselective functionalizations of cyclodextrins carried out under power ultrasound or microwaves"

G. A. Heropoulos, T. Mason, D. Walton, M. Bucos, M. Micha-Screttas, C. G. Screttas and B. R. Steele, *Joint WGs (3,6,8) Meeting, "Microwave and*

ultrasounds towards process intensification”, Rouen, France, 20-21 March **2008**.

“Preliminary indication of the ultrasound frequency dependence on the chemoselectivity of the bromination reactions of substituted alkylaromatics with *N*-bromosuccinimide”

I. Liratzis, I. D. Kostas, and **G. A. Heropoulos**, *4th International Symposium MAM-08, Macro-and Supramolecular Architectures and Materials, Düsseldorf, 7-11 September 2008*.

“The Development of β -Cyclodextrin End-Functionalized Triazine Dendrimers and Amino-Terminated Star-Shaped β -Cyclodextrins Using “Click Chemistry” as Potent Systems for Application in SUPRAMOLECULAR Chemistry and GENE Transfer”

M. Bucos, C. Villalonga-Barber, M. Micha-Screttas, B. R. Steele, C. G. Screttas and **G. A. Heropoulos**, *COST D32 Action, Chemistry under High-Energy Microenvironments, Krakow (Poland) March 29-April 1 2009*. “Salt effects on the microwave assisted dry chlorination reactions of xylenes with *N*-chlorosuccinimide”

B.R. Steele, S. Georgakopoulos, C. Villalonga-Barber, K.A. Vallianatou, **G.A. Heropoulos**, M. Micha-Screttas, International Dendrimer Symposium 6, Stockholm, Sweden, June **2009**.

“Synthetic approaches towards dendrimeric organometallic near-infrared dyes”

G.A. Heropoulos, M. Sleiman, M. Micha-Screttas, B.R. Steele, T. Calogeropoulou, International Dendrimer Symposium 6, Stockholm, Sweden, June **2009**.

“New “Click Chemistry” routes to polyhydroxy dendrons”

M. Bucos, C. Villalonga-Barber, M. Micha-Screttas, B. R. Steele, C. G. Screttas, **G. A. Heropoulos**, *16th European Symposium on Organic Chemistry, Prague, 12-16 July 2009*.

“Salt Effects on Simple Microwave-Phonons Assisted Chlorination Reactions”

M. Bucos, C. Villalonga-Barber, M. Micha-Screttas, B. R. Steele, C. G. Screttas and **G. A. Heropoulos**, *11th Frank Warren Conference, Pietermaritzburg, South Africa 17-21 January 2010*.

“Passive Heating Element and Salt Effect on Simple Microwave Assisted Chlorination Reactions”

M. D. Manouilidou, L. Leondiadis, G. Heropoulos, K. Yannakopoulou, *15th International Cyclodextrin Symposium, Vienna, Austria, May 9-12, 2010*.

“Microwave assisted synthesis of a β -cyclodextrin dimer from mono(6-aminopropylamino-6-deoxy)- β CD and butynedioic acid”