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## **Curriculum Vitae**

**Dr. Pantelis N. Trikalitis, Associate Professor**

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**Personal details**

Date of Birth: March 17, 1971  
Place of Birth: Thebes, Greece  
Nationality: Greek  
Marital status: Married

**Research Experience and Education**

- **December 2009 – present:** Associate Professor Department of Chemistry, University of Crete.
- **March 2004 - November 2009:** Assistant Professor, Department of Chemistry, University of Crete. Tenure granted in June 2008.
- **September 2003 - February 2004:** Assistant Professor (non-tenure track position), Department of Materials Science and Engineering, University of Ioannina, Greece.
- **April 2003 - June 2003:** Marie Curie Industrial Postdoctoral Fellow: Agfa–Gevaert N.V. – R&D Materials, Antwerp, Belgium. Project: “Characterization of nanostructured materials for digital imaging applications using electron microscopy (SEM/TEM)”.
- **May 1999 - March 2003:** Postdoctoral Research Associate, Michigan State University, Department of Chemistry, USA, Advisor Prof. Mercuri G. Kanatzidis. Project: “Synthesis, Characterization and Properties of novel semiconducting mesostructured chalcogenide-based materials”.
- **September 1997 - May 1999 (20 months):** Compulsory military service: Greek Air Force.
- **April 1993 - June 1997:** Postgraduate student, University of Ioannina, Greece. Advisor Prof. Philippos J. Pomonis. Ph.D. Thesis Title: “Preparation, Characterization and Catalytic Behavior of Perovskites Containing Vanadium”.
- **September 1988 - April 1993:** Undergraduate student, Department of Chemistry, University of Ioannina, Greece.

**Summary of Skills & Expertise****Synthesis**

Methods for solution and sol-gel chemistry as well as for solid-state chemistry (high temperature, hydrothermal and solvothermal reactions). Manipulations under inert atmosphere for air sensitive materials (glove box, Schlenk line, flame sealing and vacuum techniques).

**Characterization techniques**

Single crystal X-ray diffraction. Powder X-ray diffraction combined with Rietveld analysis method and atomic pair distribution function technique (PDF) using conventional X-rays sources (CuK $\alpha$ , Ag) and synchrotron radiation. Scanning electron microscopy (SEM). Energy dispersive spectroscopy (EDS). Transmission electron microscopy (TEM) and selected area electron diffraction measurements (SAED). Mid and far Infra-Red spectroscopy (reflectance and transmittance mode). Solution and solid state Raman and UV-Vis spectroscopy. Solid state photoluminescence (PL) measurements. Solution NMR of  $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{119}\text{Sn}$  and  $^{125}\text{Te}$  nuclei. Solid state MAS- NMR and CP-MAS-NMR of  $^{13}\text{C}$  and  $^{119}\text{Sn}$  nuclei. Mössbauer spectroscopy of  $^{119}\text{Sn}$  and  $^{57}\text{Fe}$  nuclei. Electron paramagnetic resonance spectroscopy (EPR). Magnetic susceptibility (SQUID, VSM). Thermogravimetric analysis (TGA). Differential thermal analysis (DTA). Differential scanning calorimetry (DSC). Surface area measurements (BET).

## **Overview of Current Research Activities**

**Project A:** Novel, porous metal-organic frameworks (MOFs) based on new functionalized aromatic carboxylate ligands. We have synthesized and characterized new ligands that allow the construction of novel open framework materials. We are currently investigating their gas sorption properties including H<sub>2</sub>, CH<sub>4</sub> and CO<sub>2</sub>.

**Project B:** Novel nanoporous organosilicate materials with high aromatic framework content. We are developing new nanoporous organosilicates using a surfactant assisted methodology and condensable aromatic siloxane precursors, for gas storage/separation applications.

**Project C:** Synthesis and characterization of novel, templated and hybrid metal chalcogenides: (a) We are exploring (hydro)solvothermal reactions for the development of new open-framework chalcogenides. (b) Synthesis, characterization and properties of non-oxidic coordination polymers using chalcogenide-based bridging organic ligands and transition metal cations.

**Project D:** Synthesis of molecular metal-chalcogenide compounds and study of their solution chemistry using electrospray mass spectrometry (ES/MS) and multinuclear NMR techniques. Metal-chalcogenide salts such as K<sub>4</sub>SnQ<sub>4</sub> and K<sub>4</sub>Sn<sub>2</sub>Q<sub>6</sub> (Q=Se, Te) containing the discrete Zintl anions [SnQ<sub>4</sub>]<sup>4-</sup> and [Sn<sub>2</sub>Q<sub>6</sub>]<sup>4-</sup> respectively, have been used as precursor for the construction of novel mesostructured chalcogenides. However, although these anions are stable in solid state (under inert conditions), in solution are susceptible in complex condensation or partial solvolysis reactions that produce other species, all acting as potential building blocks. We are currently using ES/MS and NMR (<sup>119</sup>Sn, <sup>77</sup>Se, <sup>125</sup>Te) techniques in order a) to identify and characterize all the molecular anions that are present in solution (aqueous and non-aqueous solvents) under particular reaction conditions and b) to identify the conditions in which a specific anion or a set of known anions are present. A manuscript is in preparation).

## **Instrumentation and Techniques**

A strong effort has been devoted to establish a functional synthetic laboratory to implement the above research projects. Thus far the lab is equipped with two (2) nitrogen glove boxes (one dry and one wet), four (4) computer controlled high temperature furnaces (up to 1200 °C), one (1) vacuum oven (up to 200 °C) and two (2) drying ovens. In addition, a double vacuum line has been installed, serving as sealing apparatus (for glass and quartz reaction tubes) or to perform standard Schlenk line techniques. Moreover, a commercial state-of-the-art volumetric gas adsorption apparatus (Quantachrome 1MP, micropore option) has been installed recently in the lab. This instrument, in addition to the standard volumetric analysis using nitrogen gas for the determination of the specific surface area and pore size distribution of porous materials, performs measurement of the adsorption capacities of H<sub>2</sub>, CH<sub>4</sub>, CO<sub>2</sub> and non-corrosive vapours (e.g. H<sub>2</sub>O, isopropanol), in porous solids at different temperatures.

The students in the lab are getting training in a variety of synthetic techniques including methods for solution, sol-gel and solid-state chemistry (high temperature, hydrothermal and solvothermal reactions) as well as for manipulations under inert atmosphere for air sensitive materials (glove box, Schlenk line, flame sealing and vacuum techniques). As part of the standard materials characterization techniques, the students become familiar with powder and single-crystal X-ray diffraction measurements, thermal analysis techniques (TGA, DTA, DSC), electron microscopy (SEM/EDS and TEM), solid-state UV-vis/near IR diffuse reflectance, Raman and IR spectroscopy as well as multinuclear (e.g. <sup>119</sup>Sn, <sup>77</sup>Se) NMR spectroscopy in solution. The instrumentation is provided from the Department of Chemistry and nearby, inside campus, facilities.

**Funding ID**

Start-up funding from the Department of Chemistry: **9,000 €**.

Research grants as an Assistant Professor in the Department of Chemistry:

- Funding agency: Innova-Technology Solutions S.R.L. Title: “Synthesis and Characterization of Novel Organosilica Solids for Hydrogen Storage Applications”.  
Principal Investigator (PI): Pantelis N. Trikalitis, Dept. of Chemistry, University of Crete.  
**Budget: 55,500 €**  
Duration: August 2007 – August 2009.
- Funding agency: General Secretariat of Research and Technology in Greece (G.S.R.T.). Title: “Synthesis, Characterization and Study of the Optoelectronic and Catalytic Properties of Novel Semiconducting Nanostructured Materials Based on Metal-Chalcogenides (PENED 03ED450)”.  
Principal Investigator (PI): Pantelis N. Trikalitis, Dept. of Chemistry, University of Crete.  
**Budget: 112,500 €**  
Duration: November 2005 – December 2008.
- Funding agency: European Union & Greek Ministry of Education (Interreg IIIA Greece-Cyprus K2301.004). Title: “Research and Education in Nanomaterials and Nanotechnology: Design, Development and Applications”.  
Principal Investigator (PI): Pantelis N. Trikalitis, Dept. of Chemistry, University of Crete.  
**Budget: 305,000 €**  
Duration: September 2006 – December 2008.
- Funding agency: G.S.R.T. Title: “Self-assembled Nanostructures for Novel Catalytic and Chiral Processes (PENED 03ED903).  
Principal Investigator (PI): P.J. Pomonis, Dept. of Chemistry, University of Ioannina.  
Budget: 200,000 €. The amount of 50,000 € was transferred to the University of Crete and allocated to Pantelis N. Trikalitis (partner) to perform a relevant research.
- Funding agency: G.S.R.T. Title: “Development of Nanostructured Hybrid Inorganic/Polymer Materials for Random Laser Applications (PENED 03ED581).  
Principal Investigator (PI): Spiros Anastasiadis, Foundation of Research and Technology.  
Budget: 228,000 €. The amount of 37,000 € was allocated to Pantelis N. Trikalitis (partner) to perform a relevant research.  
Duration: November 2005 – December 2008.
- Funding agency: Secretariat of the Research Committee at the University of Crete. Title: “Synthesis of Nanostructured Oxides and Chalcogenides”.  
Principal Investigator (PI): Pantelis N. Trikalitis, Dept. of Chemistry, University of Crete.  
**Budget: 5,000 €**  
Duration: March 2006 – July 2007.
- Funding agency: Crete Regional Operational Programme & European Union. Title: “High Resolution Transmission and Scanning Electron Microscopes in the University of Crete”.  
Principal Investigators (co-PI’s): Professor Pantelis N. Trikalitis (Dept. of Chemistry, University of Crete), Associate Professor George Halepakis (Dept. of Biology, University of Crete) and Assistant Professor Ioannis Dalezios (Medicine Department, University of Crete).  
**Budget: 1,000,000 €**  
Fully equipped, state-of-the-art Transmission (JEM-2100 LaB<sub>6</sub>) and Scanning (JSM-6390LV) Electron Microscopes were installed at the University of Crete in January 2009.

## **Teaching**

### **Undergraduate courses**

- Inorganic Chemistry II, 3<sup>rd</sup> year students, Textbooks: “Inorganic Chemistry” by Shriver and Atkins and “Principles of Structure and Reactivity” by J. E. Huysse. **Spring semester of 2005, 2006, 2007, 2008, 2009 and fall semester of 2010 (mandatory course).**
- Solid State Chemistry, 4<sup>th</sup> year students, Textbook: “Basic Solid State Chemistry” by A. West, **Fall semester of 2004, 2005 and 2006 (optional course).**
- Chemistry of Advanced Materials, Textbooks: Special topic chapters from “Inorganic Chemistry” by Shriver and Atkins and lecture notes. **Fall semester of 2010.**

### **Graduate courses**

- Transmission Electron Microscopy, Textbooks: “Transmission Electron Microscopy” by David B. Williams and C. Barry Carter and selected topics from “Introduction to Conventional Transmission Electron Microscopy” by Marc De Graef. **Spring semester of 2009 and 2010.**
- Advanced Solid State Chemistry, Textbook: “Solid State Chemistry and its Applications” by A. West. **Fall semester of 2007, 2008, 2009 and spring semester of 2010.**
- Introduction to X-ray Crystallography. This is a 3 week course joined with other topics, mainly spectroscopic techniques (e.g. NMR). Reading: Selected chapters from “X-ray Structure Determination – A practical Guide” by G.H. Stout and L.H. Jensen and from “Structure Determination by X-ray Crystallography” by M.F.C. Ladd and R.A. Palmer. **Fall semester of 2005, 2006, 2007, 2008 and 2009.**

## **Supervising**

Group members (past and present):

- Four (4) Ph.D. students graduated in December 2009
- One (1) student towards a master degree (started: Fall 2007)
- One (1) student towards a master degree (started: Fall 2008)
- One (1) graduated student graduated with a master degree (started: Fall 2004, graduated: Fall 2006).
- One (1) undergraduate research project (started: Fall 2006, finished: Fall 2007).

**Papers Published in Peer-Reviewed Journals** (Chronological Descending Order)

1. **Remarkable structural diversity and single-crystal-to-single-crystal transformations in sulfone functionalized lanthanide MOF's.** Eleftheria Neofotistou, Christos D. Malliakas and Pantelis N. Trikalitis. Accepted for publication in *CrystEngComm* **2010** 12, 1034–1037.
2. **A Molecular Supertetrahedron Decorated with Exposed Sulfonate Groups Built from Mixed-Valence Tetranuclear  $\text{Fe}_3^{3+}\text{Fe}^{2+}(\mu_3\text{-O})(\mu_3\text{-SO}_4)_3(-\text{CO}_2)_3$  Clusters.** Ioanna Papadaki, Christos D. Malliakas, Thomas Bakas and Pantelis N. Trikalitis. *Inorg. Chem.* **2009** (48), 9968–9970.
3.  **$(\text{H}_2\text{NC}_4\text{H}_8\text{NCH}_2\text{CH}_2\text{NH}_2)(\text{HNCH}_2\text{CH}_2\text{NH}_2)_3\text{Zn}_2\text{Ge}_2\text{Se}_8$ : A New, Templated One-Dimensional Ternary Semiconductor Stabilized by Mixed Organic Cations.** Aggelos Philippidis and Pantelis N. Trikalitis. *Polyhedron*, **2009** (28), 3193–3198.
4. **Unprecedented, Sulfone Functionalized Metal-Organic Frameworks and Gas Sorption Properties.** Eleftheria Neofotistou, Christos Malliakas and Pantelis N. Trikalitis\*. *Chem. Eur. J.* 15(18), 4523–4527, **2009**.
5.  **$(\text{H}_2\text{NC}_4\text{H}_8\text{NCH}_2\text{CH}_2\text{NH}_2)_2\text{Zn}_2\text{Sn}_2\text{Se}_7$ : A Hybrid Ternary Semiconductor Stabilized by Amine Molecules Acting Simultaneously as Ligands and Counterions.** Aggelos Philippidis, Thomas Bakas and Pantelis N. Trikalitis\*. *Chem Commun.* 12, 1556–1558 **2009**.
6. **Straightforward Route to the Adamantane Clusters  $[\text{Sn}(4)\text{Q}(10)](4-)$  (Q = S, Se, Te) and Use in the Assembly of Open-Framework Chalcogenides  $(\text{Me}_4\text{N})(2)\text{M}[\text{Sn}_4\text{Se}_{10}]$  (M = Mn-II, Fe-II, Co-II, Zn-II) Including the First Telluride Member  $(\text{Me}_4\text{N})(2)\text{Mn}[\text{Ge}_4\text{Te}_{10}]$ .** Tsamourtzis K, Song JH, Bakas T, Freeman AJ, Trikalitis PN\*, Kanatzidis MG\*. *Inorg. Chem.* 47, 11920–11929 **2008**.
7. **Charge transport in a single superconducting tin nanowire encapsulated in a multiwalled carbon nanotube.** Tombros N, Buit L, Arfaoui I, Tsoufis T, Gournis D, Trikalitis PN, van der Molen SJ, Rudolf P, van Wees BJ. *Nano Letters* 8, 3060–3064 **2008**.
8. **Evaluation of first-row transition metal oxides supported on clay minerals for catalytic growth of carbon nanostructures.** Tsoufis T, Jankovic L, Gournis D, Trikalitis PN, Bakas T. *Mat. Sci. Eng. B-Solid* 152, 44–49, **2008**.
9. **On-site monitoring of fish spoilage using vanadium pentoxide xerogel modified interdigitated gold electrodes.** S. Helali a, A. Abdelghania, N. Jaffrezic-Renault b, P.N. Trikalitis c, C.E. Efstathioud, M.I. Prodromidis, Accepted for publication in *Electrochim. Acta*.
10. **Novel coordination polymers based on the tetrathioterephthalate dianion as bridging ligand.** Eleftheria Neofotistou, Christos D. Malliakas and Pantelis N. Trikalitis\*. *Inorg. Chem.* **2007**, 46, 8487–8489.
11. **Porous semiconducting gels and aerogels from chalcogenide clusters.** Santanu Bag, Pantelis N. Trikalitis, Peter J. Chupas, Gerasimos S. Armatas and Mercouri G. Kanatzidis. *Science* **2007**, 317, 490–493.
12. **Carbon Nanotubes Encapsulating Superconducting Single-Crystalline Tin Nanowires.** Lubo Jankovič, Dimitrios Gournis\*, Pantelis N. Trikalitis\*, Imad Arfaoui, Tristan Cren, Petra Rudolf\*, Marie-Hiløne Sage, Thomas T. M. Palstra, Bart Kooi, Jeff De Hosson, Michael A. Karakassides, Konstantinos Dimos, Aliko Moukarika, and Thomas Bakas. *Nano Letters* **2006**, 6 (6), 1131–1135.
13. **Ordered mesoporous  $\text{CoO}_x/\text{MCM-41}$  materials exhibiting long-range self-organized nanostructured morphology.** A.P. Katsoulidis, D.E. Petrakis, G.S. Armatas, P.N. Trikalitis and P.J. Pomonis *Microp. Mesop. Mater.* **2006**, 92 (1–3), 71–80.
14. **Mesostructured cobalt and nickel molybdenum sulfides.** Trikalitis, P.N., Kerr, T.A., Kanatzidis, M.G. *Microp. Mesop. Mater.* **2006**, 88(1–3), 187–190.

15. **Synthesis, characterization and performance of vanadium hexacyanoferrate as electrocatalyst of H<sub>2</sub>O<sub>2</sub>.** Tsiafoulis, C.G., Trikalitis, P.N., Prodromidis, M.I. *Electrochem. Commun.* **2005**, 7 (12), 1398-1404.
16. **Electrochemical study of ferrocene intercalated vanadium pentoxide xerogel/polyvinyl alcohol composite films: Application in the development of amperometric biosensors.** Tsiafoulis, C.G., Florou, A.B., Trikalitis, P.N., Bakas, T., Prodromidis, M.I. *Electrochem. Commun.* **2005**, 7 (7), 781-788.
17. **Highly loaded and thermally stable Cu-containing mesoporous silica-active catalyst for the NO + CO reaction.** Pantazis, C.C., Trikalitis, P.N., Pomonis, P.J. *J. Phys. Chem. B* **2005**, 109(25), 12574-12581.
18. **Three-Dimensional Structure of Nanocomposites from Atomic Pair Distribution Function Analysis: Study of Polyaniline and (Polyaniline)<sub>0.5</sub>V<sub>2</sub>O<sub>5</sub>·1.0H<sub>2</sub>O.** Valeri Petkov, Vencislav Parvanov, Pantelis Trikalitis, Christos Malliakas, Tom Vogt and Mercouri G. Kanatzidis. *J. Am. Chem. Soc.* 127 (24), 8805-8812 **2005**.
19. **Periodic Hexagonal Mesostructured Chalcogenides Based on Platinum and [SnSe<sub>4</sub>]<sup>4-</sup> and [SnTe<sub>4</sub>]<sup>4-</sup> Precursors. Solvent Dependence of Nanopore and Wall Organization.** Pantelis N. Trikalitis, Thomas Bakas, and Mercouri G. Kanatzidis. *J. Am. Chem. Soc.* **2005**, 127(11), 3910-3920.
20. **Mesostructured Chalcogenides with Cubic MCM-48 type Symmetry: Large Framework Elasticity and Uncommon Resiliency to Strong Acids.** Pantelis N. Trikalitis, Nan Ding, Chris Malliakas, Simon J. L. Billinge and Mercouri G. Kanatzidis. *J. Am. Chem. Soc.* **2004**, 126, 15326-15327.
21. **Structural, Compositional and Acidic Characteristics of Nanosized Amorphous or Partially Crystalline ZSM-5 Zeolite-Based Materials.** Kostas S. Triantafyllidis, Lori Nalbandian, Pantelis N. Trikalitis, Athanasios K. Ladavos, Thomas Mavromoustakos, Christakis P. Nicolaides. *Microp. Mesop. Mater.* **2004**, 75, 89-100.
22. **Isolation of Kinetically Stable Chalcogenide Phases via Rapid Cooling of Melts : Structural Transition from Kinetic to Thermodynamically Stable Form in the KInSnSe<sub>4</sub> System.** Seong-Ju Hwang, Pantelis N. Trikalitis, Andrew G. Ogden and Mercouri G. Kanatzidis. *Inorg. Chem.*, **2004**, 43(7) 2237-2239.
23. **Kinetics investigation of NO + CO reaction on La-Sr-Mn-O perovskite-type mixed oxides.** A. A. Leontiou, A. K. Ladavos, G. S. Armatas, P. N. Trikalitis and P. J. Pomonis. *Appl. Catal., A*, **2004**, 263(2), 227-239.
24. **Structure of Redox Intercalated (NH<sub>4</sub>)<sub>0.51</sub>V<sub>2</sub>O<sub>5</sub>·mH<sub>2</sub>O Xerogel Using the Pair Distribution Function Technique.** Pantelis N. Trikalitis, Valeri Petkov and Mercouri G. Kanatzidis. *Chem. Mater.* **2003**, 15, 3337-3342.
25. **A Novel Method of Synthesis of Silicious Inorganic Ordered Materials (MCM –SBA) Employing Polyacrylic Acid - CnTAB – TEOS Nano-assemblies.** C. C. Pantazis, P. N. Trikalitis, P. J. Pomonis and M. J. Hudson. *Microporous and Mesoporous Mater.* **2003**, 66, 37-51.
26. **Single Crystal Mesostructured Semiconductors with Cubic Ia-3d Symmetry and Ion-Exchange Properties.** Pantelis N. Trikalitis, Krishnaswamy K. Rangan, Thomas Bakas and Mercouri G. Kanatzidis. *J. Am. Chem. Soc.* **2002**, 124, 12255-12260.
27. **Structure of V<sub>2</sub>O<sub>5</sub>XnH<sub>2</sub>O xerogel solved by the atomic pair distribution function technique.** V. Petkov, P. N. Trikalitis E. S. Bozin, S.J.L. Billinge, T. Vogt, and M.G. Kanatzidis. *J. Am. Chem. Soc.*, **2002**, 124, 10157-10162.
28. **Platinum Chalcogenido MCM-41 analogs. High Hexagonal Order in Mesostructured Semiconductors Based on Pt<sup>2+</sup> and [Ge<sub>4</sub>Q<sub>10</sub>]<sup>4-</sup> (Q=S, Se) and [Sn<sub>4</sub>Se<sub>10</sub>]<sup>4-</sup> Adamantane Clusters.** Pantelis N. Trikalitis, Krishnaswamy K. Rangan and Mercouri G. Kanatzidis. *J. Am. Chem. Soc.* **2002**, 124(11), 2604-2613.

29. **Magnetic Fe<sub>2</sub>O<sub>3</sub>-Al<sub>2</sub>O<sub>3</sub> composites prepared by a modified wet impregnation method.** Michael A. Karakassides, Dimitris Gournis, Athanasios B. Bourlinos, Pantelis N. Trikalitis and Thomas Bakas. *J. Mater. Chem.*, **2003**, 13, 871–876.
30. **High nuclearity nickel compounds with three, four or five metal atoms showing antibacterial activity.** Maria Alexiou, Ioannis Tsvikas, Catherine Dendrinou-Samara, Anastasia A. Pantazaki, Pantelis N. Trikalitis, Nikolia Lalioti, Dimitris A. Kyriakidis, Dimitris P. Kessissoglou. *J. Inorg. Biochem.* **2003**, 93, 256–264.
31. **Variation of surface properties and textural features of spinel ZnAl<sub>2</sub>O<sub>4</sub> and perovskites LaMnO<sub>3</sub> nanoparticles prepared via CTAB-butanol-octane-nitrate salt microemulsions in the reverse and biocontinuous states.** A. E. Giannakas, T. C. Vaimakis, A. K. Ladavos, P. N. Trikalitis and P. J. Pomonis. *J. Coll. Inter. Sci.* **2003**, 259, 244–253.
32. **Hexagonal Pore Organization in Mesostructured Metal Tin Sulfides Built with [Sn<sub>2</sub>S<sub>6</sub>]<sup>4-</sup> Clusters.** Krishnaswamy K. Rangan, Pantelis N. Trikalitis, Christian Canlas, Thomas Bakas, David Weliky and Mercuri G. Kanatzidis. *Nano Letters*, **2002**, 2(5), 513–517.
33. **Quaternary Germanides Formed in Molten Aluminum: Tb<sub>2</sub>NiAl<sub>4</sub>Ge<sub>2</sub> and Ce<sub>2</sub>NiAl<sub>6-x</sub>Ge<sub>4-y</sub> (x~0.24, y~1.34).** Brad Sieve, Pantelis N. Trikalitis and Mercuri G. Kanatzidis. *Z. Anorg. Allg. Chem.*, **2002**, 628, 1568–1574.
34. **Varied pore organization in mesostructured semiconductors based on the [SnSe<sub>4</sub>]<sup>4-</sup> anion.** Pantelis N. Trikalitis, Krishnaswamy K. Rangan, Thomas Bakas and Mercuri G. Kanatzidis *Nature* **2001**, 410, 671–675.
35. **Hexagonal mesostructured chalcogenide frameworks formed by linking [Ge<sub>4</sub>Q<sub>10</sub>]<sup>4-</sup> (Q = S, Se) clusters with Sb<sup>3+</sup> and Sn<sup>4+</sup>.** Krishnaswamy K. Rangan, Pantelis N. Trikalitis, Thomas Bakas and Mercuri G. Kanatzidis *Chem. Commun.* **2001**, (9), 809–810.
36. **Supramolecular assembly of hexagonal mesostructured germanium sulfide and selenide nanocomposites incorporating the biologically relevant Fe<sub>4</sub>S<sub>4</sub> cluster.** Pantelis N. Trikalitis, Thomas Bakas, Vasilios Papaefthymiou and Mercuri G. Kanatzidis. *Angew. Chem. Int. Ed.* **2000**, 39(24), 4558–4562.
37. **Light-emitting meso-structured sulfides with hexagonal symmetry. Supramolecular assembly of [Ge<sub>4</sub>S<sub>10</sub>]<sup>4-</sup> clusters with trivalent metal ions and cetylpyridinium surfactant.** Krishnaswamy K. Rangan, Pantelis N. Trikalitis, and Mercuri G. Kanatzidis *J. Am. Chem. Soc.* **2000**, 122(41), 10230–10231.
38. **Structure and catalytic activity of La<sub>1-x</sub>FeO<sub>3</sub> system (x=0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.35) for the NO+CO reaction.** Belessi, V. C.; Trikalitis, P. N.; Ladavos, A. K.; Bakas, T. V.; Pomonis, P. J. *Appl. Catal., A* **1999**, 177(1), 53–68.
39. **A Rietveld analysis of the transformation of (La-Sr-V-O)<sub>reduced</sub> to (La-Sr-V-O)<sub>oxidized</sub> solids and the effect on their surface catalytic properties.** Trikalitis, Pantelis N.; Bakas, Thomas V.; Moukarika, Aliko C.; Sdoukos, Antonios T.; Angelidis, Thomas; Pomonis, Philip J. *Appl. Catal., A* **1998**, 167(2), 295–308.
40. **Structure and properties of mesoporous alumino-phosphoro-vanadates.** Kolonia, Konstadina M.; Petrakis, Dimitris E.; Angelidis, Thomas N.; Trikalitis, Pantelis N.; Pomonis, Philippos J. *J. Mater. Chem.* **1997**, 7(9), 1925–1931.
41. **Surface characteristics and catalytic activity of Al-Pillared (AZA) and Fe-Al-pillared (FAZA) clays for isopropanol decomposition.** Ladavos, A. K.; Trikalitis, P. N.; Pomonis, P. J. *J. Mol. Catal. A: Chem.* **1996**, 106(3), 241–54.
42. **Catalytic activity and selectivity of perovskites La<sub>1-x</sub>Sr<sub>x</sub>V<sup>3+</sup><sub>1-x</sub>V<sup>4+</sup><sub>x</sub>O<sub>3</sub> for the transformation of isopropanol.** Trikalitis, P. N.; Pomonis, P. J. *Appl. Catal., A* **1995**, 131(2), 309–22.

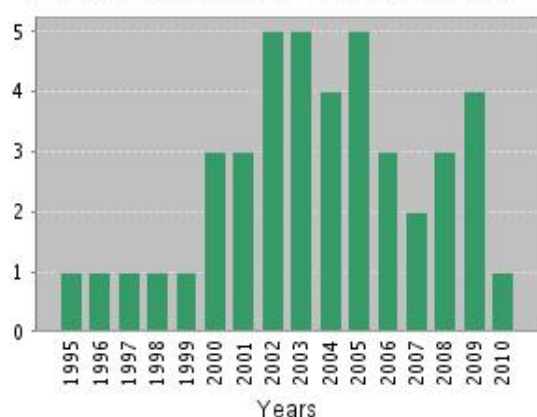
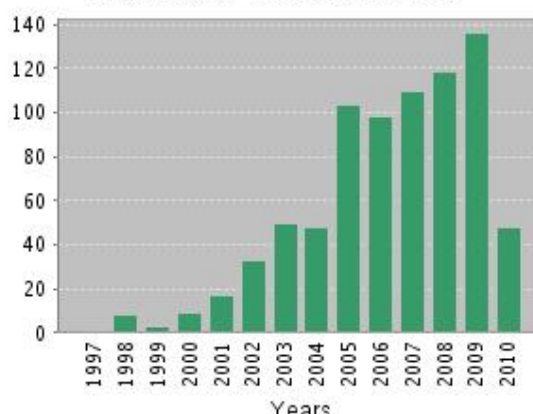


**Papers Published in Peer-Reviewed Conference Proceedings**

43. **Surfactant templated assembly of cubic mesostructured semiconductors based on  $[\text{Sn}_2\text{Se}_6]^{4-}$  and  $\text{Pt}^{2+}$  in single-crystal form.** Trikalitis, Pantelis N.; Kanatzidis, Mercuri G. Materials Research Society Symposium Proceedings (2002), 755 (Solid-State Chemistry of Inorganic Materials IV), 215-220.
44. **Surfactant templated assembly of hexagonal mesostructured semiconductors based on  $[\text{Ge}_4\text{Q}_{10}]^{4-}$  (Q=S, Se) and  $\text{Pd}^{2+}$  and  $\text{Pt}^{2+}$  ions.** Trikalitis, Pantelis N.; Rangan, Krishnaswamy K.; Kanatzidis, Mercuri G. Materials Research Society Symposium Proceedings (2002), 703 (Nanophase and Nanocomposite Materials IV), 433-438.

**Citation Report**

Source: ISI Web of Knowledge, April 2010

**Published Items in Each Year****Citations in Each Year**Total citations: **784** (*h*-index: **15**), Without self citations: **543** (*h*-index: **14**)**Papers to be Submitted**

45. **Towards Functionalized MOFs with Lewis Base Sites: Synthesis and Characterization of New Coordination Polymers using 4,8-disulfonaphthalene-2,6-dicarboxylic acid as Bridging Ligand.** Ioanna Papadaki, Christos Malliakas and Pantelis N. Trikalitis.
46. **Synthesis and Characterization of Mesostructured Tin Selenides with Cubic Gyroid Framework from Aqueous Solutions: Probing Complex Equilibria with  $^{119}\text{Sn}$  Solution NMR.** K. Tsamourtzi, A. Filippidis and P.N. Trikalitis
47. **One-step Synthesis of Borderline Supermicroporous/Mesoporous V-MCM-41 Solids with Tunable Vanadium Content, Directed by a Long-Chain Amphiphilic Organosilane.** V. Binas, K. Triantafyllidis and P.N. Trikalitis
48. **Counter-ion Induced Synthesis of Hexagonally Ordered Mesostructured Sulfides from Aqueous Solutions.** M. Kyriakou and P.N. Trikalitis.
49. **Probing Solution Chemistry of Adamantane Metal-Chalcogenide Anions  $[\text{M}_4\text{Q}_{10}]^{4-}$  (M=Ge, Sn; Q=Se, Te) with Electrospray Mass Spectrometry.** A. Filippidis, S.A. Pergantis and P.N. Trikalitis.

### Invited Seminars

1. **Novel, Functionalized Metal-Organic Frameworks for Gas Storage/Separations (H<sub>2</sub>, CO<sub>2</sub> & CH<sub>4</sub>)**. P.N. Trikalitis, Department of Chemistry, University of Patras, October 23<sup>rd</sup> 2009.
2. **Adventures in Synthesis of Functionalized MOF's and their Gas Sorption/Separation Properties** P.N. Trikalitis, Gordon Research Conference on "Inorganic Chemistry – The New Frontiers", University of New England, Biddeford, ME, USA, June 21-26 2009.
3. **Hydrogen Storage in Novel Functionalized Metal-Organic Frameworks, High Surface Area Organosilicates & Carbon-based Materials**. P.N. Trikalitis, International Conference on «Solid Storage of Hydrogen: International Perspectives», Fodele Beach Holiday Resort, June 10-12 2009.
4. **“Novel, Functionalized Metal-Organic Frameworks for Gas Storage/Separation Applications”**. P.N. Trikalitis, Zernike Institute for Advanced Materials, University of Groningen, Netherlands, January 30, 2009.
5. **Novel Open-Framework Solids for Advanced Applications**. P.N. Trikalitis, University of Calabria, Italy, April 2<sup>nd</sup> 2008.
6. **“Towards Semiconducting Coordination Polymers”**. P.N. Trikalitis, Colloquium of the Department of Material Science and Technology, University of Crete, January 12, 2007.
7. **“Condensable Amphiphiles as Templates for the Construction of Novel Super-microporous Vanado-Silicate Solids**. P.N. Trikalitis, Colloquium of the Chemical Process Engineering Research Institute ([www.cperi.certh.gr](http://www.cperi.certh.gr)) in Thessaloniki, Greece, May 26<sup>th</sup> 2006.

### Conference Presentations

#### Oral

1. 4<sup>th</sup> **Panhellenic Symposium on Porous Materials, October 22-23 2009 Conference Centre, University of Patras**. “Synthesis, Characterization and Gas Sorption Properties of High Surface Area Amorphous Graphene Oxide. Vassilios Binas, Aggelos Phillipidis, Konstantina Tsamourtzis and Pantelis N. Trikalitis.
2. 4<sup>th</sup> **Panhellenic Symposium on Porous Materials, October 22-23 2009 Conference Centre, University of Patras**. “Synthesis and Characterization of a Novel Metal-Organic Polyhedron (MOP) with Exposed Sulfonate Groups”. Ioanna Papadaki, Christos Malliakas, Thomas Bakas and Pantelis N. Trikalitis.
3. **XXIV Panhellenic Conference on Solid State Physics and Materials Science, Heraklion, Crete, September 21-24, 2008**. “Novel, Metal-Organic Frameworks using Rigid Carboxylate-based Ligands for Hydrogen Storage Applications.” P.N. Trikalitis.
4. **X Panhellenic Symposium in Catalysis, Metsovo, 3-4 October 2008. “Mesoporous Organosilicates as Hydrogen Storage Materials”**. Vassilios Binas and P.N. Trikalitis.
5. **“Advanced Materials for Hydrogen Storage”**. Workshop on “NANO- Materials and Engineering (NANO-MAT)” Department of Mechanical and Manufacturing Engineering, University of Cyprus July 8-10, 2008.
6. **3<sup>rd</sup> Panhellenic Symposium on Porous Materials, Chemical Process Engineering Research Institute (CPERI/CERTH), Thessaloniki, Greece, November 1-2, 2007**. “Synthesis of Mesostructured Tin Selenides with Cubic Gyroid Framework, from *Aqueous Solutions*: Probing Complex Equilibria with <sup>119</sup>Sn Solution NMR”.

Konstantina Tsamourtzzi and Pantelis N. Trikalitis.

7. **Materials Research Society, 2006 Fall Meeting, Boston, Massachusetts, USA November 27 - December 1, 2006.** “Condensable Amphiphiles as Templates for the Construction of Novel *Super-microporous* Vanado-Silicate Solids”. Vassilios Binas and Pantelis N. Trikalitis.
8. **XXII Panhellenic Conference on Solid State Physics and Material Science, September 23-26 2007, Athens N.C.R.S. “DEMOKRITOS”.** Novel Self-assembled Nanoporous Vanado-silicate Solids with Tunable Vanadium Content.” Vassilios Binas and Pantelis N. Trikalitis.
9. **2<sup>nd</sup> Panhellenic Symposium on Porous Materials, N.C.R.S. “DEMOKRITOS”, Athens, September 29-30, 2005.** “Synthesis of Hexagonally Ordered Mesostructured Sulfides from Aqueous Solutions”. M. Kyriakou and P.N. Trikalitis.
10. **Materials Research Society, 2000 Fall Meeting, Boston, Massachusetts, USA November 27 - December 1, 2000.** “Non-oxidic analogs of MCM-41 and MCM-48. Nanostructured non-oxidic solids based on the Zintl anion  $[\text{SnSe}_4]^{4-}$ ”. Pantelis N. Trikalitis and Mercuri G. Kanatzidis.
11. **4<sup>th</sup> Panhellenic Symposium on Catalysis, Papingo, Greece, 6-7 October 1995.** “Preparation, Characterization and Catalytic Behavior of La-Sr-V-O Perovskites”. Pantelis N. Trikalitis and Philippos J. Pomonis.
12. **4<sup>th</sup> Congress Greece-Cyprous, Ioannina, September 1994.** “Preparation, Characterization and Catalytic Activity of Vanadium Containing Perovskites”. Pantelis N. Trikalitis and Philippos J. Pomonis.

## Posters

1. **4<sup>th</sup> Panhellenic Symposium on Porous Materials, October 22-23 2009 Conference Centre, University of Patras.** “Sulfone Functionalized Meta-organic Frameworks”. Eleftheria Neofotistou, Christos Malliakas and Pantelis N. Trikalitis.
2. **1<sup>st</sup> International Conference on Metal-Organic Frameworks and Open Framework Compounds October 8 - 10, 2008, Augsburg/Germany** “Functionalized Organosilicas as Hydrogen Storage Materials”, Vassilios D. Binas and Pantelis N. Trikalitis.
3. **1<sup>st</sup> International Conference on Metal-Organic Frameworks and Open Framework Compounds October 8 - 10, 2008, Augsburg/Germany.** “Functionalized Metal-Organic Frameworks Assembled by Novel *Organic* and *Inorganic* SBU’s” Eleftheria Neofotistou, Christos Malliakas and Pantelis N. Trikalitis.
4. **1<sup>st</sup> International Conference on Metal-Organic Frameworks and Open Framework Compounds October 8 - 10, 2008, Augsburg/Germany.** “A Novel Metal-Organic Polyhedron (MOP) with Exposed Lewis Base Sites”, Ioanna Papadaki, Christos Malliakas, Thomas Bakas and Pantelis N. Trikalitis.
5. **Gordon Research Conference on Solid State Chemistry, Magdalene College Oxford, UK September 2-9, 2007.** A Hybrid Layered Semiconductor Stabilized by Amine Molecules Acting Simultaneously as Ligand and Counter-ion. A. Filippidis, T. Bakas and P.N. Trikalitis.
6. **3<sup>rd</sup> Panhellenic Symposium on Porous Materials, Chemical Process Engineering Research Institute (CPERI/CERTH), Thessaloniki, Greece, November 1-2, 2007.** Novel Coordination Polymers based on the Tetrathioterephthalate Anions and Transition Metal Cations. Eleftheria Neofotistou and Pantelis N. Trikalitis.

7. **3<sup>rd</sup> Panhellenic Symposium on Porous Materials, Chemical Process Engineering Research Institute (CPERI/CERTH), Thessaloniki, Greece, November 1-2, 2007.** New Porous Vanado-silicates using Condensable Amphiphiles as Templates. Vassilios Binas and Pantelis N. Trikalitis.
8. **XXII Panhellenic Conference on Solid State Physics and Materials Science, September 23-26 2007, Athens N.C.R.S. "DEMOKRITOS".** Probing Solution Chemistry of Metal-Chalcogenide Anions with Electrospray Mass Spectrometry. Aggelos Filippidis and Pantelis N. Trikalitis.
9. **XXII Panhellenic Conference on Solid State Physics and Materials Science, September 23-26 2007, Athens N.C.R.S. "DEMOKRITOS".** Synthesis and Characterization of Mesostructured Chalcogenides from Aqueous Solutions. Konstantina Tsamourtzi and Pantelis N. Trikalitis.
10. **4<sup>th</sup> International Workshop on "Nanosciences & Nanotechnologies" (NN07), Thessaloniki, Greece, 16-18 July 2007.** Evaluation of first-row transition metal oxides supported on clay minerals for catalytic growth of carbon nanotubes" T. Tsoufis, L. Jankovic, D. Gournis, P.N. Trikalitis and T. Bakas.
11. **Gordon Research Conference on Solid State Chemistry, June 5-10, 2005 Il Ciocco Lucca (Barga), Italy.** (Attendance)
12. **Trends in Nanotechnology 2006 (TNT 2006), Grenoble, France, 4-8 September 2006.** "Carbon Nanotubes Encapsulating Superconducting Single-Crystalline Tin Nanowires." I. Arfaoui, L. Jankovič, D. Gournis, Pantelis N. Trikalitis, et al.
13. **Gordon Research Conference on Solid State Chemistry, Queen's College Oxford, UK September 14-19, 2003.** Ordered Mesostructured Semiconducting Chalcogenides from  $[\text{SnSe}_4]^{4-}$  and  $[\text{SnTe}_4]^{4-}$  Precursors. Solvent Dependent Equilibria and Implications for Inorganic Wall Organization. Pantelis N. Trikalitis, Thomas Bakas and Mercuri G. Kanatzidis.
14. **Materials Research Society, 2002 Fall Meeting, Boston, Massachusetts, USA December 2 – 6, 2002.** Surfactant Templated Assembly of Cubic Mesostructured Semiconductors Based on  $[\text{Sn}_2\text{Se}_6]^{4-}$  and  $\text{Pt}^{2+}$  in Single-Crystal Form. Pantelis N. Trikalitis and Mercuri G. Kanatzidis.
15. **Gordon Research Conference on Solid State Chemistry, Colby-Sawyer College, New London, NH, USA, July 28 - August 2, 2002.** Single Crystal Mesostructured Semiconductors with Cubic  $Ia-3d$  Symmetry and Ion-Exchange Properties. P. N. Trikalitis and M. G. Kanatzidis.
16. **16<sup>th</sup> Annual CFMR (Center for Fundamental Materials Research) Symposium, Michigan State University, East Lansing, MI, April 14th & 15th, 2002.** Structure of  $\text{V}_2\text{O}_5 \cdot n\text{H}_2\text{O}$  xerogel solved by the atomic pair distribution function technique. V. Petkov, P. N. Trikalitis E. S. Bozin, S.J.L. Billinge, T. Vogt, and M.G. Kanatzidis.
17. **Materials Research Society, 2001 Fall Meeting, Boston, Massachusetts, USA November 26 - 30, 2001.** Surfactant Templated Assembly of Hexagonal Mesostructured Semiconductors Based on  $[\text{Ge}_4\text{Q}_{10}]^{4-}$  (Q=S, Se) and  $\text{Pd}^{2+}$  and  $\text{Pt}^{2+}$  ions. Pantelis N. Trikalitis, Krishnaswamy K. Rangan and Mercuri G. Kanatzidis. *Award Nominee*
18. **Gerald T. Babcock Symposium, Michigan State University, East Lansing, MI, June 1-2, 2001.** Non-Oxidic Semiconducting Mesostructured Materials. Pantelis N. Trikalitis, K. Kasthuri Rangan, Thomas Bakas and Mercuri G. Kanatzidis.

19. **15<sup>th</sup> Annual CFMR (Center for Fundamental Materials Research) Symposium, Michigan State University, East Lansing, MI, March 25th & 26th, 2001.** Open Framework Mesostructured Semiconductors with Uniform Hexagonal Pore Organization. P. N. Trikalitis, K. K. Rangan and M. G. Kanatzidis.
20. **15<sup>th</sup> Annual CFMR (Center for Fundamental Materials Research) Symposium, Michigan State University, East Lansing, MI, March 25th & 26th, 2001.** Mesostructured Metal Sulfides with Photoluminescence Properties. K. K. Rangan, P. N. Trikalitis and M. G. Kanatzidis.
21. **Gordon Research Conference on Solid State Chemistry, Colby-Sawyer College, New London, NH, USA, July 30 - August 4, 2000.** Mesostructured Non-Oxidic Semiconductors Based on the Tetrahedral Zintl Anion  $[\text{SnSe}_4]^{4-}$ . P. N. Trikalitis, K. K. Rangan, T. Bakas and M. G. Kanatzidis.
22. **219<sup>th</sup> American Chemical Society National Meeting, San Francisco, CA, USA March 26 - 30, 2000.** Mesostructured Non-Oxidic Solids Based on Tetrahedral Zintl Anions  $[\text{GeQ}_4]^{4-}$ ,  $[\text{SnQ}_4]^{4-}$  (Q=Se, Te). P. N. Trikalitis, K. K. Rangan and M. G. Kanatzidis.
23. **14<sup>th</sup> Annual CFMR (Center for Fundamental Materials Research) Symposium, Michigan State University, East Lansing, MI, February 27th & 28th, 2000.** New Ordered Mesostructured Materials with  $[\text{Ge}_4\text{Q}_{10}]^{4-}$  (Q=S, Se) Adamantane Clusters. K. K. Rangan, P. N. Trikalitis and M. G. Kanatzidis.
24. **1<sup>st</sup> Scientific Congress of Chemical Engineering, Patra, Greece, May 29-31 1997.** Influence in the Catalytic Activity of the non-stoichiometric Perovskites  $\text{La}_{1-x}\text{FeO}_3$  ( $x=0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.35$ ) for NO+CO Reaction. V. Belessi, P. N. Trikalitis, A. Ladavos and P. Pomonis.
25. **17<sup>th</sup> Panhellenic Congress in Chemistry, Patra, Greece, December 1-5, 1996.** Preparation, Characterization and Catalytic Activity of Perovskites La-V-Fe-O for NO+CO Reaction. P. N. Trikalitis, A. Sdoukos, T. Bakas, V. Papaefthymiou and P. J. Pomonis.
26. **EUROPACAT-II Congress, Maastricht, The Netherlands, September 3-8, 1995.** Preparation, Characterization and Catalytic Activity of Vanadium Perovskites  $(\text{LaVO}_3)_{1-x}(\text{SrVO}_3)_x$ . P. N. Trikalitis and P. J. Pomonis.
27. **4<sup>th</sup> Chemistry Conference Greece-Cyprus, Ioannina, Greece, September 8-11, 1994.** Synthesis, Characterization and Catalytic Activity of Vanadium Containing Perovskites. P. N. Trikalitis, and P. J. Pomonis.

**Scientific Activities**

Reviewer in the following Journals:

- Inorganic Chemistry (ACS)
- Chemistry of Materials (ACS)
- Journal of Solid State Chemistry (Elsevier)
- Journal of Physics and Chemistry of Solids (Elsevier)
- Microporous and Mesoporous Materials (Elsevier)

Workshop Organizer:

- «Multifunctional Nanostructured Materials» Department of Chemistry, University of Crete, July 2-6, 2007.

Member of Organising and Scientific Conference Committees:

- XXIV Panhellenic Conference on Solid State Physics and Materials Science, Heraklion, Crete, September 21-24, 2008.
- 3<sup>rd</sup> Panhellenic Symposium on Porous Materials, Chemical Process Engineering Research Institute (CPERI/CERTH), Thessaloniki, Greece, November 1-2, 2007.
- 2<sup>nd</sup> Panhellenic Symposium on Porous Materials, N.C.R.S. "DEMOKRITOS", Athens, September 29-30, 2005.

Scientific society memberships:

- American Chemical Society
- Materials Research Society
- Hellenic Chemical Society