

Personal details	
Name:	Georgios Kordogiannis (George Cordoyiannis)
Date of birth:	25.01.1975
Nationality:	Hellenic (Greek)
E-mail address:	<a href="mailto:georgios.kordogiannis@gmail.com">georgios.kordogiannis@gmail.com</a>
Education	
2002-2005	<p><b>PhD</b> in Physics: Faculty of Applied Mathematical and Physical Sciences, National Technical University of Athens, Greece.</p> <p><b>Thesis title:</b> "Structural and thermodynamic study of the effects of quenched-random-disorder upon phase transitions of liquid crystals."</p>
1999-2001	<p><b>MSc</b> in Microelectronics: Faculty of Informatics &amp; Telecommunications, National Kapodistrian University of Athens, Greece.</p> <p><b>Thesis title:</b> "Etching of polymeric lithography materials in a high-density, inductively-coupled plasma etcher."</p>
1992-1997	<p><b>BSc</b> in Physics: Faculty of Physics, National Kapodistrian University of Athens, Greece.</p>
Professional career	
2019-after date	Senior Researcher (full-time) in Faculty of Mechanical Engineering, Czech Technical University in Prague, Czech Republic.
2018-after date	Research Associate (part-time) in Faculty for Industrial Engineering, Novo mesto, Slovenia.
2018	Scientific consulting for the Company Scientific Research Consulting – Hellas.
2016-2018	Self-employed.
2015-2016	Research Associate in Condensed Matter Physics Department, Jožef Stefan Institute, Slovenia.
2012-2015	<p>Primary investigator of the European Social Fund Project PE3-1535 within the Operational Program "Education and Lifelong Learning", National Kapodistrian University of Athens, Greece and Jožef Stefan Institute, Slovenia.</p> <p><b>Title:</b> "Enhancement of giant electrocaloric, multiferroic and optical properties of advanced materials by critical and self-organisation phenomena."</p>
2012	<p>Team member of European Office of Aerospace Research and Development Grant FA8655-12-1-2068, Jožef Stefan Institute, Slovenia.</p> <p><b>Title:</b> "Controlled trapping and self-assembly of nanoparticles in defect lattices."</p>
2011-2012	<p>Partial employment in NAMASTE Centre of Excellence, Slovenia.</p> <p><b>Research assignments:</b> direct measurements of the giant electrocaloric effect in inorganic ceramic relaxors.</p>
2010-2012	<p>Employment in EN FIST Centre of Excellence, Slovenia.</p> <p><b>Research assignments:</b> optimisation of properties of smart nano-materials.</p>
2009	<p>Post-doctoral fellow (Slovene Human Resources Development and Scholarship Fund AD FUTURA), Jožef Stefan Institute, Slovenia.</p> <p><b>Research assignments:</b> phase transitions and critical phenomena in elastomers.</p>
2006-2009	<p>Post-doctoral fellow, Department of Physics and Astronomy, KU Leuven, Belgium.</p> <p>Employment through Projects of KU Leuven Research Council, FWO and AVISCO Project G.0230.07 (Belgian State).</p> <p><b>Research assignments:</b> phase transitions, self-assembly and critical phenomena in liquid crystals in confined geometries, liquid mixtures and phase change materials.</p>
2005-2006	<p>Post-doctoral fellow in European FU.L.C.E. Project HPRN-CT-2002-00169.</p> <p><b>Research assignments:</b> experimental studies of liquid-crystalline elastomers and liquid crystals in confined geometries.</p>

2002-2004	Participant in the Greek-Slovenian Bilateral Scientific and Technological Cooperation GR16/2004.
2000-2001	<b>Research assignments:</b> experimental studies of liquid crystals in confined geometries. Participant in Supportive Research Project, N.C.S.R. Demokritos, Greece. <b>Title:</b> "Thermodynamic studies of proteins and supra-molecular systems."

### Research topics

Phase transitions and critical phenomena in liquid crystals, lipid membranes and vesicles. Experimental studies of soft nano-composites, liquid crystals in confined geometries, liquid-crystalline elastomers and polymers, surfaces and interfaces, binary liquid mixtures, ferrofluids, electrocaloric and elastocaloric effect.

### Experimental methods

High-resolution calorimetric methods (adiabatic scanning calorimetry, ac calorimetry, differential scanning micro-calorimetry, isothermal titration micro-calorimetry), high-resolution small-angle and wide-angle X-ray scattering (User at SOLEIL and ELETTRA Synchrotron facilities), polarizing and fluorescence microscopy, quartz-crystal microbalance with heat dissipation.

### Publications (peer-reviewed journals)

1. D. Eon, L. de Pouques, M. C. Peignon, Ch. Cardinaud, G. Turban, A. Tserepi, **G. Cordoyiannis**, E. S. Valamontes, I. Raptis and E. Gogolides, "Surface modification of Si-containing polymers during etching for bilayer lithography", *Microelectronic Engineering* 61-62: 901 (2002).
2. E. Gogolides, P. Argitis, H. Koladourous, V. Vidali, M. Vassilopoulou, **G. Cordoyiannis**, C. D. Diakoumakos and A. Tserepi, "Photoresist etch resistance enhancement using novel polycarbocyclic derivatives as additives", *Journal of Vacuum Science and Technology B* 21: 141 (2003).
3. A. Tserepi, **G. Cordoyiannis**, G. P. Patsis, V. Constantoudis, and E. Gogolides, E. S. Valamontes, D. Eon, M. C. Peignon, Ch. Cardinaud and G. Turban, "Etching behaviour of Si-containing polymers as resist materials for bilayer lithography: the case of poly-dimethyl siloxane", *Journal of Vacuum Science and Technology B* 21: 174 (2003).
4. A. Tserepi, E. Gogolides, V. Constantoudis, **G. Cordoyiannis**, I. Raptis and E. S. Valamontes, "Surface roughness induced by plasma etching of Si-containing polymers", *Journal of Adhesion Science and Technology* 17: 1083 (2003).
5. N. Mourtzis, **G. Cordoyiannis**, G. Nounesis and K. Yannakopoulou, "Rotaxation of Congo Red into  $\gamma$ -Cyclodextrin. Solution structures and thermodynamic properties of 1:1 and 1:2 adducts, as obtained from NMR Spectroscopy and Microcalorimetry", *Supramolecular Chemistry* 15: 639 (2003).
6. Z. Kutnjak, **G. Cordoyiannis** and G. Nounesis, "Dielectric and thermal study of the influence of aerosils on the ferroelectric SmA-SmC\* phase transition", *Ferroelectrics* 294: 105 (2003).
7. **G. Cordoyiannis**, G. Nounesis, V. Bobnar, S. Kralj and Z. Kutnjak, "Confinement-induced orientational order in a ferroelectric liquid crystal containing dispersed aerosils", *Physical Review Letters* 94: 027801 (2005).
8. Z. Kutnjak, **G. Cordoyiannis**, G. Nounesis, A. Lebar and S. Žumer, "Calorimetric study of phase transitions in a liquid-crystal-based microemulsion", *Journal of Chemical Physics* 122: 224709 (2005).

9. **G. Cordoyiannis**, S. Kralj, G. Nounesis, S. Žumer and Z. Kutnjak, "Soft-Stiff regime crossover for an aerosil network dispersed in liquid crystals", *Physical Review E* 73: 031707 (2006).
10. **G. Cordoyiannis**, Z. Kutnjak, S. Kralj and G. Nounesis, "Pretransitional effects near the smectic-A to smectic-C\* phase transition of hydrophilic and hydrophobic aerosil networks dispersed in ferroelectric liquid crystals", *Physical Review E* 75: 021702 (2007).
11. S. Kralj, **G. Cordoyiannis**, A. Zidanšek, G. Lahajnar, H. Amenitsch, S. Žumer and Z. Kutnjak, "Presmectic wetting and supercritical-like phase behaviour of cyanobiphenyl liquid crystal confined to controlled-pore glass matrices", *Journal of Chemical Physics* 127: 154905 (2007).
12. **G. Cordoyiannis**, B. Zalar, A. Lebar, S. Žumer, H. Finkelmann and Z. Kutnjak, "Criticality controlled by cross-linking density in liquid single-crystal elastomers", *Physical Review Letters* 99: 197801 (2007).
13. K. Denolf, **G. Cordoyiannis**, C. Glorieux and J. Thoen, "Effect of nonmesogenic solutes on the order of the specific heat capacity behavior of the N-SmA phase transition in the liquid crystal 8CB", *Physical Review E* 76: 051702 (2007).
14. **G. Cordoyiannis**, D. Apreutesei, G. Mehl, C. Glorieux and J. Thoen, "High-resolution calorimetric study of a liquid crystalline organo-siloxane tetrapode with a biaxial nematic phase", *Physical Review E* 78: 011708 (2008).
15. P. Nockemann, K. Binnemans, B. Thijs, T. N. Parac-Vogt, K. Merz, A. V. Mudring, P. C. Menon, R. Nair Rajesh, **G. Cordoyiannis**, J. Thoen, J. Leys and C. Glorieux, "Temperature-driven mixing-demixing behavior of binary mixtures of the ionic liquid choline bis(trifluoromethylsulfonyl)imide and water", *Journal of Physical Chemistry B* 113: 1429 (2009).
16. **G. Cordoyiannis**, L. F. V. Pinto, M. H. Godinho, C. Glorieux and J. Thoen, "High-resolution calorimetric study of the tridecyl octylcyanobiphenyl and tetradecyl cyanobiphenyl liquid crystals", *Phase Transitions* 82: 280 (2009).
17. **G. Cordoyiannis**, Z. Kutnjak, G. Lahajnar, C. Glorieux and J. Thoen, "High-resolution calorimetric investigation of the existence of a nematic phase for the dodecylcyanobiphenyl liquid crystal", *Liquid Crystals* 36: 231 (2009).
18. **G. Cordoyiannis**, A. Lebar, B. Rožič, Z. Kutnjak, S. Žumer, F. Brömmel, S. Krause and H. Finkelmann, "Controlling the critical behavior of paranematic to nematic transition in main-chain liquid single-crystal elastomers", *Macromolecules* 42: 2069 (2009).
19. **G. Cordoyiannis**, L. K. Kurihara, L. J. Martínez-Miranda, C. Glorieux and J. Thoen, "Effect of magnetic nanoparticles with different surface coating on the phase transitions of octylcyanobiphenyl liquid crystal", *Physical Review E* 79: 011702 (2009).
20. J. Thoen, **G. Cordoyiannis** and C. Glorieux, "Investigations of phase transitions in liquid crystals by means of adiabatic scanning calorimetry", *Liquid Crystals* 36: 669 (2009).
21. **G. Cordoyiannis**, A. Zidanšek, G. Lahajnar, Z. Kutnjak, H. Amenitsch, G. Nounesis and S. Kralj, "Influence of controlled-porous glass confinement on the layer spacing of smectic A liquid crystals", *Physical Review E* 79: 051703 (2009).
22. J. Leys, P. Losada-Pérez, **G. Cordoyiannis**, C. A. Cerdeiriña, C. Glorieux and J. Thoen, "Temperature and concentration dependence of the dielectric constant near the critical point of the binary mixture nitrobenzene-tetradecane", *Journal of Chemical Physics* 132: 104508 (2010).
23. P. Losada-Pérez, **G. Cordoyiannis**, C. A. Cerdeiriña, C. Glorieux and J. Thoen, "Specific heat capacity of nitrobenzene-tetradecane near the liquid-liquid critical

- 
- point", *International Journal of Thermophysics* 31: 710 (2010).
24. **G. Cordoyiannis**, A. Sánchez-Ferrer, H. Finkelmann, B. Rožič, S. Žumer and Z. Kutnjak, "Thermal study of the Isotropic to Smectic C phase transition in liquid-crystalline elastomers", *Liquid Crystals* 37: 349 (2010).
  25. B. Rožič, S. Krause, H. Finkelmann, **G. Cordoyiannis** and Z. Kutnjak, "Controlling the thermomechanical response of liquid-crystalline elastomers by influencing their critical behaviour", *Applied Physics Letters* 96: 111901 (2010).
  26. E. Karatairi, B. Rožič, V. Tzitzios, G. Nounesis, Z. Kutnjak, **G. Cordoyiannis**, J. Thoen, C. Glorieux and S. Kralj, "Nanoparticles-induced widening of the temperature range of liquid-crystalline blue phases", *Physical Review E* 81: 041703 (2010).
  27. **G. Cordoyiannis**, B. Rožič, Z. Kutnjak, H. Finkelmann and S. Žumer, "The effect of mesogen length on the paranematic-to-nematic phase transition of polydomain side-chain liquid crystalline elastomers", *European Physical Journal E* 32: 243 (2010).
  28. **G. Cordoyiannis**, C. S. P. Tripathi, C. Glorieux and J. Thoen, "The order of phase transitions and tricriticality in mixtures of 8OCB and 9OCB liquid crystals: a high-resolution study by adiabatic scanning calorimetry", *Physical Review E* 82: 031707 (2010).
  29. **G. Cordoyiannis**, P. Losada-Pérez, C. S. P. Tripathi, B. Rožič, U. Tkalec, E. Karatairi, V. Tzitzios, G. Nounesis, Z. Kutnjak, I. Mušević, C. Glorieux, S. Kralj and J. Thoen, "Blue phase III widening in CE6-dispersed surface-functionalised CdSe nanoparticles", *Liquid Crystals* 37: 1419 (2010).
  30. B. Rožič, V. Tzitzios, E. Karatairi, U. Tkalec, G. Nounesis, Z. Kutnjak, **G. Cordoyiannis**, R. Rosso, E. G. Virga, I. Mušević and S. Kralj, "Experimental and theoretical study of the nanoparticle-driven blue phase stabilisation", *European Physical Journal E* 34: 17 (2011).
  31. P. Losada-Pérez, C. S. P. Tripathi, J. Leys, **G. Cordoyiannis**, C. Glorieux and J. Thoen, "Measurements of heat capacity and enthalpy of phase-change materials by adiabatic scanning calorimetry", *International Journal of Thermodynamics* 32: 913 (2011).
  32. B. Rožič, M. Jagodič, S. Gyergyek, M. Drogenik, S. Kralj, **G. Cordoyiannis** and Z. Kutnjak, "Multiferroic behaviour in mixtures of a ferroelectric liquid crystal and magnetic nanoparticles", *Molecular Crystals and Liquid Crystals* 545: 99 (2011).
  33. D. Jesenek, S. Kralj, **G. Cordoyiannis** and Z. Kutnjak, "Double-peak specific heat capacity anomaly in mixtures of liquid crystals and nanoparticles", *Molecular Crystals and Liquid Crystals* 546: 3 (2011).
  34. B. Rožič, **G. Cordoyiannis**, S. Krause, H. Finkelmann and Z. Kutnjak, "Reviewing the mechanisms that affect the critical behaviour of the nematic side-chain and main-chain elastomers", *Molecular Crystals and Liquid Crystals* 547: 91 (2011).
  35. B. Rožič, E. Karatairi, G. Nounesis, V. Tzitzios, **G. Cordoyiannis**, S. Kralj and Z. Kutnjak "Impact of surface-functionalised CdSe nanoparticles on phase transitions of 8CB and CE8 liquid crystals", *Molecular Crystals and Liquid Crystals* 553: 161 (2012).
  36. **G. Cordoyiannis**, D. Kramer, M. Lavrič, H. Finkelmann and Z. Kutnjak, "Calorimetric investigation of the isotropic to smectic-A phase transition of smectic liquid-crystalline elastomers", *Molecular Crystals and Liquid Crystals* 553: 193 (2012).
  37. S. Kralj, **G. Cordoyiannis**, D. Jesenek, A. Zidanšek, G. Lahajnar, N. Novak, H. Amenitsch and Z. Kutnjak, "Dimensional crossover and scaling behavior of smectic liquid crystals confined in controlled-pore glass matrices", *Soft Matter* 8: 2460 (2012).
  38. N. Novak, **G. Cordoyiannis** and Z. Kutnjak, "Dielectric and heat capacity study of

- (Pb(Mg)O<sub>3</sub>)<sub>0.74</sub>-(PbTiO<sub>3</sub>)<sub>0.26</sub> ferroelectric relaxor near the cubic-tetragonal-rhombohedral triple point”, *Ferroelectrics* 428: 43 (2012).
39. C. S. P. Tripathi, P. Losada-Pérez, J. Leys, **G. Cordoyiannis**, C. Glorieux and J. Thoen, “Evidence from adiabatic scanning calorimetry for the Halperin-Lubensky-Ma effect at the N-SmA phase transitions in mixtures of 7OCB+heptane with an injected SmA phase”, *European Physical Journal E* 35: 54 (2012).
  40. A. Lebar, **G. Cordoyiannis**, Z. Kutnjak and B. Zalar, “The isotropic-to-nematic conversion in liquid crystalline elastomers”, *Advances in Polymer Science* 250: 147 (2012).
  41. **G. Cordoyiannis**, V. S. R. Jampani, S. Kralj, S. Dhara, V. Tzitzios, E. Karatairi, G. Basina, G. Nounesis, Z. Kutnjak, C. S. P. Tripathi, P. Losada-Pérez, C. Glorieux, I. Mušević, H. Amenitsch and J. Thoen, “Different modulated structures with topological defects stabilized by adaptive targeting nanoparticles”, *Soft Matter* 9: 3956 (2013).
  42. M. Lavrič, **G. Cordoyiannis**, S. Kralj, V. Tzitzios, G. Nounesis and Z. Kutnjak, “Effect of anisotropic MoS<sub>2</sub> nanoparticles on the blue phases of a chiral liquid crystal”, *Applied Optics* 52: E47 (2013).
  43. A. Ranjkesh, M. Ambrožič, **G. Cordoyiannis**, Z. Kutnjak and S. Kralj, “History dependent patterns in randomly perturbed nematic liquid crystals”, *Advances in Condensed Matter Physics* 2013: 505219 (2013).
  44. S. Kralj, D. Jesenek, **G. Cordoyiannis**, G. Lahajnar and Z. Kutnjak, “Memory-controlled smectic wetting of liquid crystals confined in controlled-pore matrices”, *Fluid Phase Equilibria* 351: 87 (2013).
  45. B. Rožič, M. Jagodič, S. Gyergyek, Z. Jagličić, S. Kralj, V. Tzitzios, **G. Cordoyiannis** and Z. Kutnjak, “Indirect magnetoelectric coupling in mixtures of magnetite and ferroelectric liquid crystal”, *Ferroelectrics* 446: 39 (2013).
  46. B. Rožič, J. Koruza, Z. Kutnjak, **G. Cordoyiannis**, B. Malič and M. Kosec, “The electrocaloric effect in lead-free K<sub>0.5</sub>Na<sub>0.5</sub>NbO<sub>3</sub>-SrTiO<sub>3</sub> ceramics”, *Ferroelectrics* 448: 12 (2013).
  47. A. Thanassoulas, E. Karatairi, **G. Cordoyiannis**, Z. Kutnjak, V. Tzitzios, I. Lelidis and G. Nounesis, “CdSe nanoparticles dispersed in ferroelectric smectics: effect upon the smectic order and the Smectic-A to chiral Smectic-C phase transition”, *Physical Review E* 88: 032504 (2013).
  48. M. Lavrič, V. Tzitzios, S. Kralj, **G. Cordoyiannis**, I. Lelidis, G. Nounesis, V. Georgakilas, D. Jesenek, H. Amenitsch and Z. Kutnjak, “The effect of graphene on the liquid-crystalline blue phases”, *Applied Physics Letters*, 103: 143116 (2013).
  49. G. Mirri, V. S. R. Jampani, **G. Cordoyiannis**, P. Umek, P. Kouwer and I. Mušević, “Stabilisation of 2D colloidal assemblies by polymerisation of liquid-crystalline matrices for photonic applications”, *Soft Matter* 10: 5797 (2014).
  50. M. Trček, **G. Cordoyiannis**, V. Tzitzios, S. Kralj, I. Lelidis, G. Nounesis and Z. Kutnjak, “Nanoparticle-induced twist-grain boundary phases”, *Physical Review E* 90: 032501 (2014).
  51. S. Kralj, E. Lacaze, **G. Cordoyiannis** and Z. Kutnjak, “Smectic A herringbone patterns”, *Journal of Physics Conference Series* 558: 012009 (2014).
  52. J. Koruza, B. Rožič, **G. Cordoyiannis**, Z. Kutnjak and B. Malič, “Large electrocaloric effect in lead-free K<sub>0.5</sub>Na<sub>0.5</sub>NbO<sub>3</sub>-SrTiO<sub>3</sub> ceramics”, *Applied Physics Letters* 106: 202905 (2015).
  53. M. Lavrič, V. Tzitzios, **G. Cordoyiannis**, S. Kralj, G. Nounesis and Z. Kutnjak “Blue phase range widening induced by laponite nanoplatelets in the chiral liquid crystal CE8”, *Molecular Crystals and Liquid Crystals* 615: 14 (2015).
  54. R. Pirc, B. Rožič, J. Koruza, **G. Cordoyiannis**, B. Malič and Z. Kutnjak, “Anomalous

- dielectric and thermal properties of Ba-doped PbZrO<sub>3</sub> ceramics”, *Advances in Condensed Matter Physics* 27: 455902 (2015).
55. M. Cvetko, G. Lahajnar, M. Ambrožič, A. Abina, U. Puc, **G. Cordoyiannis**, S. Kralj, Z. Kutnjak and A. Zidanšek, “Random nematic structures in the absence of inherent frustrations”, *Liquid Crystals* 42: 1674 (2015).
  56. **G. Cordoyiannis**, S. Gyergyek, B. Rožič, S. Kralj, Z. Kutnjak and G. Nounesis, “The effect of magnetic nanoparticles upon the smectic-A to smectic-C\* phase transition”, *Liquid Crystals* 43: 313 (2016).
  57. M. Trček, **G. Cordoyiannis**, Z. Kutnjak, G. Nounesis and I. Lelidis, “Twist-grain-boundary A\* phase stabilization in confined geometry by the interfaces”, *Liquid Crystals* 43: 1437 (2016).
  58. M. Trček, M. Lavrič, **G. Cordoyiannis**, B. Zalar, B. Rožič, S. Kralj, V. Tzitzios, G. Nounesis and Z. Kutnjak, “Electrocaloric and elastocaloric effects in soft materials”, *Philosophical Transactions of the Royal Society A* 347: 20150301 (2016).
  59. H. Kaddoussi, A. Lahmar, Y. Gagou, B. Asbani, J. L. Dellis, **G. Cordoyiannis**, B. Allouche, H. Khemakhem, Z. Kutnjak and M. El Marssi, “Indirect and direct electrocaloric measurements of (Ba<sub>1-x</sub>Ca<sub>x</sub>)(Zr<sub>0.1</sub>Ti<sub>0.9</sub>)O<sub>3</sub> ceramics (x=0.05, x=0.20)”, *Journal of Alloys and Compounds* 667: 198 (2016).
  60. M. Trček, **G. Cordoyiannis**, B. Rožič, V. Tzitzios, G. Nounesis, S. Kralj, I. Lelidis, E. Lacaze, H. Amenitsch and Z. Kutnjak, “Twist-grain boundary phase induced by Au nanoparticles in a chiral liquid crystal host”, *Liquid Crystals* 44: 1575 (2017).
  61. S. Neupane, **G. Cordoyiannis**, F. U. Renner and P. Losada-Pérez, “Real-time monitoring of interactions between solid-supported lipid vesicle layers and short- and medium-chain length alcohols: ethanol and 1-pentanol”, *Biomimetics* 4: 8 (2019).
  62. M. Lavrič, **G. Cordoyiannis**, V. Tzitzios, S. Kralj, G. Nounesis, H. Amenitsch and Z. Kutnjak, “The effect of CoPt-coated reduced-graphene oxide nanosheets upon the Smectic A to chiral Smectic C\* transition of a chiral liquid crystal”, *Liquid Crystals*, in press (2019).

#### Other scientific contributions

More than 60 contributions in international conferences (invited talks, oral talks, posters), 4 book chapters, 1 international patent (WO 2003/038523).

#### Citations

1068 citations, 925 without self-citations, h-index 18 (Web of Science, 2019).

#### Reviewing experience

Reviewer for Physical Review Letters, Journal of Physical Chemistry B, Liquid Crystals, Journal for Polymer Science B, Physica B, Journal of Chemical Thermodynamics, Beilstein Journal of Organic Chemistry, Crystals, Nanomaterials.

#### Army obligations

Accomplished mandatory service of 18 months in Marines, Special Forces, National Army of Greece, 1998-1999.

#### Hobbies

Sports (martial arts, cycling, basketball, swimming), reading, culinary, bonsais.