

## ΒΙΟΓΡΑΦΙΚΟ ΣΗΜΕΙΩΜΑ

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### EDUCATION

- Doctorate in Condensed Matter Physics, National Technical University of Athens, School of Applied Mathematical and Physical Sciences, Department of Physics, Greece (2000).
- Master's Degree in Physics, University of Oklahoma, Department of Physics and Astronomy, U.S.A. (1993). Military service 1989–1991.
- Diploma in Mechanical Engineering, National Technical University of Athens, Greece (1988).

### RESEARCH & TEACHING APPOINTMENTS

- 6/2014 - to date: Research Scientist in vibrational spectroscopy applications, research director level, TPCI, NHRF, Athens, Greece.
- 10/2007-5/2014: Research Scientist in vibrational spectroscopy applications, senior researcher level, TPCI, NHRF, Athens, Greece.
- 9/2004-9/2007: Research Associate and Adjunct Lecturer, National Technical University of Athens (NTUA), School of Applied Mathematical and Physical Sciences (SAMPS), Department of Physics, Greece.
- 9/2003-7/2004: Adjunct Lecturer, University of Patras, Department of Materials Science, Greece.
- 4/2000-12/2002: Postdoctoral Researcher, National Research Council (CNR), Institute for the Study of Nanostructured Materials (ISMN), Bologna division, Italy.
- 1/1994-3/2000: Teaching and Research Assistant, NTUA, SAMPS, Department of Physics, Greece.

1/1992-6/1993: Teaching Assistant, University of Oklahoma, Department of Physics and Astronomy, Norman, Oklahoma, USA.

## **MAIN RESEARCH INTERESTS**

Vibrational spectroscopic characterization of materials aiming to determine or clarify variations of their structural units at the micro/meso/nano-scale and arrive at correlations with some of their properties.

- Vibrational Spectroscopy (Raman and Infrared) in Materials Physical Chemistry
  - (a) structure-property correlations in oxide glasses with targeted advanced functionalities. In many cases these functionalities are developed with post-synthesis treatment (e.g. laser irradiation towards development of new linear optical properties, thermal-electric-field poling for nonlinear optical properties, micro- or nano-indentation for improved mechanical properties). Connected to this activity is the Second Harmonic Generation characterization of materials (glasses etc).
  - (b) Other selected science and technology applications in vibrational spectroscopy include hybrid perovskite materials, mineralogy and wastewater management, surface-enhanced Raman scattering.
  - (c) Archaeological materials – Heritage science. Based on the expertise acquired from the study of the short- and medium-range order of oxide glasses, applications in mineralogy and vibrational spectroscopy in general, activity extended to the study of archaeological glass and other cultural heritage materials.
  - (d) work in Condensed Matter Physics up to 2009 includes transition metal oxides (high temperature cuprate superconductors, manganites, vanadates), fullerenes and derivative systems, other materials for applications (e.g. hybrid organic/inorganic solid state photovoltaic cells, semiconductors, etc).
- AFM/Raman correlative microscopy. With the acquisition of a new AFM/Raman integrated setup (expected to be installed by the beginning of 2025), in the framework of the NHRF Centre of Excellence project, D. Palles will be the person in charge on behalf of TPCI.

On several occasions D. Palles acts as the liaison person, in charge of initiating or performing vibrational spectroscopy measurements on behalf of TPCI external collaborators.

## RESEARCH PROJECTS

Coordinator Assistant or participant in 14 national and international research projects in collaboration with academic and industrial organizations (GSRT/ESPA national projects: Greek Infrastructures, KRIPIS, PENED, EPET, etc; EC projects: Marie Curie-TMR, STREP, TOK, ERA.Net-RUS).

## CONFERENCES

33 international and 12 national conferences, 15 talks to Universities/Institutes.

## HONORS & AWARDS

Fellowship of the Greek State Scholarship Foundation (IKY) for doctorate thesis (Nov. 1994 - Apr. 1998).

Fellowship of the Greek State Scholarship Foundation (IKY) for post-doctoral research (Nov. 2003–Oct. 2004).

## PUBLICATIONS

82 refereed publications in journals, 16 refereed publications in conference proceedings, 99 conference publications or presentations.

Google Scholar 19.02.2024 update – Citations: more than 2360; h-index: 25.

## SELECTED RECENT PUBLICATIONS

1. "Surface-enhanced Raman spectroscopy of graphene integrated in plasmonic silicon platforms with a three-dimensional nanotopography", Kanidi, M.; Dagkli, A.; Kandyla, M.; Kelaidis, N.; Palles, D.; Colli, A.; Lidorikis, E.; Aminalragia-Giamini, S.; Marquez-Velasco, J.; Dimoulas, A.; Kamitsos, E., *J. Phys. Chem. C* **2019**, *123*, 3076-3087.
2. "Nanographene oxide-TiO<sub>2</sub> photonic films as plasmon-free substrates for surface-enhanced Raman scattering", Papadakis, D.; Diamantopoulou, A.; Pantazopoulos, P.-A.; Palles, D.; Sakellis, I.; Boukos, N.; Stefanou, N.; Likodimos, V., *Nanoscale* **2019**, *11*, 21542-53.
3. "Halogen-NH<sub>2</sub> Interaction, Temperature Induced Phase Transitions and Ordering in (NH<sub>2</sub>CHNH<sub>2</sub>)PbX<sub>3</sub> (X = Cl, Br, I) Hybrid Perovskites", A.G. Kontos, G.K. Manolis, A. Kaltzoglou, D. Palles, E.I. Kamitsos, M. Kanatzidis, P. Falaras, *J. Phys. Chem. C* **2020**, *124*, 8479-8487.
4. "Phosphorus and potassium recovery from anaerobically digested olive mill wastewater using modified zeolite, lignite fly ash and zeolitic fly ash: a comparative study", D. Mitrogiannis, M. Psychogiou, G. Manthos, K. Tsigkou, M.

- E. Kornaros, N. Koukouzas, D. Michailidis, D. Palles, E. I. Kamitsos, C. Mavrogonatos and I. Baziotis, *Journal of Chemical Technology & Biotechnology* **2022**, *97*, 1860-73.
5. "Archaeological and historical study of Lykion complemented by IR and Raman spectroscopic investigation", M. Papageorgiou, V. Boura, D. Palles, H. Brecolaki, K. Kallintzi, M. Chrysaphi, and E.I. Kamitsos, *Sci. Cult., J. Appl. Sci. & Technology to Cultural Heritage Issues* **2022**, *8*, 95-113.
  6. "Second harmonic generation and structural rearrangements in multicomponent antimonite glasses by electro-thermal poling", B. Topper, N.S. Tagiara, D. Palles, F. Lind, M.T. Soltani, L. Wondraczek, D. Möncke, E. I. Kamitsos, *J. Amer. Cer. Soc.* **2023**, *106*, 4163-4180 (18 pages).
  7. "Thermal-electric-field poling in bioactive sodium-calcium phosphate silicate glass: anodic near-surface glass connectivity rearrangements and related second harmonic generation", D. Palles, M. Dussauze, C.R. Mariappan, V. Rodriguez, B. Roling, E.I. Kamitsos, *J Non-Cryst. Solids: X* **2023**, *17*, 100164 (12 pages).
  8. "Fragments of luxury: Opaque glass from the Palace of Mystras, Greece", E. Palamara, D. Palles, E. I. Kamitsos, P. P. Das, J. I. Tirado, S. Nicolopoulos and N. Zacharias, *Journal of Archaeological Science: Reports* **2023**, *51*, 104145 (7 pages).
  9. "The complementary use of Raman, FTIR spectroscopy and chemometrics for investigating the deterioration of artificially aged parchment", E. Malea, S.C. Boyatzis, D. Karlis, D. Palles, S. Boghosian, S. Zervos, submitted in 2023 to *Journal of Raman Spectroscopy*.

updated February 2024