

## ***Panagiota D. Natsi***

**Title:** Collaborative Teaching Staff (Assistant Lecturer) / Junior in Chinese system

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Dr. Panagiota Natsi graduated in 2014 from the Department of Chemical Engineering of University of Patras, Greece and in 2016 completed her master's degree in the same department specializing in 'Energy and Environment'. In 2021 she completed her PhD thesis at the Department of Chemical Engineering of University of Patras with the subject of Biological Calcification and specifically the formation and growth of calcium carbonate in microalgae. She has served as a teaching assistant in Polymers Laboratory, Physical Chemistry Laboratory and Mass Transfer Phenomena undergraduate courses in Department of Chemical Engineering (University of Patras), and co-supervised (11) diploma theses. She has totally over 6 years' experience in teaching and research.

Her expertise covers the scientific fields of Crystallization Processes with a specialty in the precipitation kinetics mechanisms of salts at different conditions and substrates. Biological calcification is one of her scientific interest areas. Her technical skills include chemical analysis techniques (atomic absorption spectrometry, ion chromatography, visible-ultraviolet spectrometry, potentiometry and electrochemical analysis) and material characterization techniques (measurement of specific surfaces, X-ray diffractometry, optical microscopy with image processing and scanning electron microscopy).

From 2021 she is employed as a postdoctoral researcher in the Laboratory of Inorganic and Analytical Chemistry, (IACH Lab) at Chemical Engineering Department of University of Patras. She has participated in 6 National Conferences and in 10 International Conferences, with publications in Conferences Proceedings, so far.

### ***Publications in Peer-Reviewed Journals and Book chapters***

1. P.D. Natsi, S. Rokidi, P.G. Koutsoukos, Precipitation of Calcium Carbonate (CaCO<sub>3</sub>) in Water– Monoethylene Glycol Solutions, *Industrial & Engineering Chemistry Research*, **2019**, 58(12), 4732–4743.
2. A.Tzachristas, P.D. Natsi, D.G. Kanellopoulou, J. Parthenios, P.G Koutsoukos, C.A. Paraskeva, V. Sygouni, Mineral scaling in the presence of oil/water interfaces combined with substrate's wettability effect: from batch to microfluidic experiments, *Industrial & Engineering Chemistry Research*, **2021**, 60(22), 8244–8254.
3. P.D. Natsi., P.G. Koutsoukos, Calcium Carbonate Mineralization of Microalgae, *Biomimetics* **7**, **2022**, 140.
4. P.D. Natsi, P.G. Koutsoukos, Calcium Carbonate Crystallization on a Microalgal Matrix: The Effects of Heavy Metals Presence, *Crystals*, **2022**, 12, 1424.
5. P.G. Koutsoukos, P.D. Natsi, S.P. Gartaganis, P.S. Gartaganis, Biological Mineralization of Hydrophilic Intraocular Lenses, *Crystals*, **2022**, 12, 1418.
6. P.D. Natsi, K.-A. Goudas, P.G Koutsoukos, Phosphorus Recovery from Municipal Wastewater: Brucite from MgO Hydrothermal Treatment as Magnesium Source. *Crystals*, **2023**, 13, 208.
7. P.S. Gartaganis, P.D. Natsi, S.P. Gartaganis, P.G. Koutsoukos, E. Manousakis, E. Karmiris, Explantation of a sutureless scleral fixated Carlevalle intraocular lens due to calcification: a clinical and laboratory report, *BMC Ophthalmol* **23**, **2023** 359.
8. A. Florou, G. Bampos, P.D. Natsi, A. Kokka, P. Panagiotopoulou, Propylene Production via Oxidative Dehydrogenation of Propane with Carbon Dioxide over Composite MxOy-TiO<sub>2</sub> Catalysts, *Nanomaterials*, **14**, **2024**, 86.
9. P.D. Natsi, M. Kanakis, L. Sygellou, P.S. Gartaganis, S.P. Gartaganis, P.G. Koutsoukos, Graphene-Derivative Coatings for the Prevention of Opacification Due to Calcification of Hydrophilic Intraocular Lenses, *Crystals* **14**, **2024**, 150.
10. P.G. Koutsoukos, P.D. Natsi, P.S. Gartaganis, S.P. Gartaganis, Calcification of Biomaterials, *Water-Formed Deposits, Fundamentals and Mitigation Strategies* Chapter 23, **2022**, Pages 495-509

11. P.D. Natsi, S. Rokidi, P.G. Koutsoukos, Calcium Carbonate Scale Formation and Prevention in Aqueous Solutions and Mixed Solvents», *Industrial Water Treatment—New Trends, Challenges, and Solutions*, Chapter 6, **2017**

### Conference Publications

1. Precipitation of calcium carbonate in aqueous solutions in presence of ethylene glycol and dodecane, P.D. Natsi, S. Rokidi, P.G. Koutsoukos, European Geosciences Union General Assembly (EGU) 2015 |Vienna |Austria| April 2015
2. Calcium carbonate Scale Formation and Prevention in Aqueous Solutions and Mixed Solvents, P.D. Natsi, S. Rokidi, P.G. Koutsoukos, Corrosion NACE 2016, Vancouver
3. Is the surface hydroxyl groups a deleterious factor for hydrophilic acrylic IOL calcification, P.S. Gartaganis, P.D. Natsi, S.F. Alimisi, S.P. Gartaganis, P.G. Koutsoukos, 36th World Ophthalmology Congress ®, (WOC)|Barcelona, Spain |16-19 June 2018
4. Calcification of hydrophilic intraocular lens following Descemet membrane endothelial keratoplasty (DMEK) using intracameral injection of air or gas: A possible explanation, P.S. Gartaganis, P.D. Natsi, S.F. Alimisi, S.P. Gartaganis, P.G. Koutsoukos, 6th Congress of the European Society of Cataract and Refractive Surgeons (ESCRS) |Vienna 2018| 22-26 September
5. Understanding delimited calcification of hydrophilic IOLs associated with intraocular air/gas, P.S. Gartaganis, P.D. Natsi, S.F. Alimisi, S.P. Gartaganis, P.G. Koutsoukos 3rd Winter Meeting of the European Society of Cataract and Refractive Surgeons (ESCRS)|Athens|15-17 February 2019
6. Calcium Carbonate Biofouling, P.D. Natsi, P. G. Koutsoukos. Paper presented at the CORROSION 2019, Nashville, Tennessee, USA, March 2019
7. Calcium Carbonate Scale Formation in Water- Mono ethylene glycol (MEG), P.D. Natsi, S.G. Rokidi, P.G. Koutsoukos Paper presented at the CORROSION 2019, Nashville, Tennessee, USA, March 2019
8. On the efficiency of gypsum scale inhibition by phosphonates: The role of molecular architecture, B.I. Kougiass, P.D. Natsi, P.G. Koutsoukos, Paper presented at the CORROSION 2019, Nashville, Tennessee, USA, March 2019
9. The Formation of struvite Scale Formation and the Effect of As(V) and Hg (II) impurities, N. Chatzipetros, P. Natsi, P.G. Koutsoukos, Paper presented at the CORROSION 2019, Nashville, Tennessee, USA, March 2019
10. Phosphorus and nitrogen recovery from wastewater in the form of struvite: alternative magnesium sources, G. Primikyris, K. Siahos, A. Vavouraki, C.V. Putnis, P.D. Natsi, P.G. Koutsoukos, 16th International Conference on Environmental Science and Technology, Rhodes, Greece 4-7 September 2019
11. The effect of the presence of zinc on the precipitation of CaCO<sub>3</sub> from supersaturated solutions», P.D. Natsi, E. Moystaki, P.G. Koutsoukos, 16th International Conference on Environmental Science and Technology, Rhodes, Greece 4-7 September 2019
12. Experimental Model for the Simulation of the Calcification of Hydrophilic Intraocular Lenses in Contact with Air or Gas, S.P. Gartaganis, P.D. Natsi, S.F. Alimisi, S.P. Gartaganis, P.G. Koutsoukos, ASCRS Annual Meeting 2020
13. Mechanistic Explanation for the Calcification of Hydrophilic IOLs, P.S. Gartaganis, P.D. Natsi, S.F. Alimisi, S.P. Gartaganis, P.G. Koutsoukos, ASCRS Annual Meeting, 2020
14. Calcium Carbonate Biofouling in the Presence of Heavy Metals, P.D. Natsi, P. G. Koutsoukos, Paper presented at the CORROSION 2021, Virtual, April 2021
15. Inhibition of calcium carbonate scale formation in Water-Mono ethylene glycol solutions by water soluble polymers, P.D. Natsi, P.G. Koutsoukos, Paper presented at the CORROSION 2021, Virtual, April 2021
16. Inhibition of Formation of Magnesium Hydroxide by Polymers: The Role Molecular Architecture, P.D. Natsi, P.G. Koutsoukos, Z. Amjad, Paper presented at the CORROSION 2021, Virtual, April 2021
17. Nucleation and Crystal Growth of Calcium Carbonate in the Presence of Zn, P.G. Koutsoukos, P.D. Natsi, Z. Amjad, Paper presented at the AMPP Annual Conference + Expo, San Antonio, Texas, USA, March 2022
18. Polymer Architecture Effect on Zinc Ions Stabilization in Aqueous Systems, Z. Amjad, P.G. Koutsoukos, P.D. Natsi, Paper presented at the AMPP Annual Conference + Expo, San Antonio, Texas, USA, March 2022

19. Review of the State of the Art of Siliceous Scale Management in Industrial Systems, P.G. Koutsoukos, P.D. Natsi, Z. Amjad, Paper presented at the AMPP Annual Conference + Expo, San Antonio, Texas, USA, March 2022
20. Biological Mineralization of Hydrophilic Intraocular Lenses, P.G. Koutsoukos, P.D. Natsi, P.S. Gartaganis, S.P. Gartaganis, Polish Conference on Crystal Growth 2022, June 2022
21. Hydrophilic Intraocular Lens Calcification and The Role of Surface Charge, P.S. Gartaganis, G. Ziomas, T. Kourassi, P. Natsi, J. Kalantzis, S. Gartaganis, P. Koutsoukos, 40th Congress of the European Society of Cataract and Refractive Surgeons, (ESCRS 2022), Milan, Italy, September 2022
22. Protective coatings against formation of scale deposits, P.D. Natsi, E. Zande, P.G. Koutsoukos, AMPP 2023, March 19-23, 2023
23. Is Surface Charge Important for Scaling on Polymeric Matrices?, P.D. Natsi, G. Ziomas, Th. Kourassi, P.G. Koutsoukos, AMPP 2023, March 19-23, 2023
24. Hydrophilic Intraocular Lens Calcification and the Role of Surface Charge, P.S. Gartaganis, G. Ziomas, T. Kourassi, P. Natsi, J. Kalantzis, S. Gartaganis, P. Koutsoukos, ASCRS ASOA, Annual Meeting, San Diego, CA, March 8, 2023
25. Polymers, induce heterogeneous nucleation and crystal growth of sparingly soluble salts, P.D. Natsi, P.G. Koutsoukos, 2nd International Conference on Physical Chemistry and Spectroscopy (ICPCS), 27-29 September 2023, Patras, Greece
26. Study of the precipitation kinetics of calcium carbonate ( $\text{CaCO}_3$ ) in aqueous solutions in the presence of ethylene glycol and dodecane, P. D. Natsi, S. Rokidi, P.G. Koutsoukos, 10<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2015, Patras
27. Precipitation of calcium carbonate in presence of mono ethyleneglycol and polymeric inhibitors, P. D. Natsi, P.G. Koutsoukos, 11<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2017, Thessaloniki
28. Phosphorus Recovery from Aqueous Wastewaters by Crystallization: The Role of Anionic and Cationic Contaminants, N. Chatzipetros, P.D. Natsi, K. Vavouraki, P.G. Koutsoukos, 11<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2017, Thessaloniki
29. Study of  $\text{CaCO}_3$  precipitation in the presence of microalgae, P. D. Natsi, P.G. Koutsoukos, 12<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2019, Athens
30.  $\text{CaCO}_3$  precipitation in the presence of Zinc, Z. Moustaki, P. D. Natsi, P.G. Koutsoukos, 12<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2019, Athens
31. Calcium Sulphate deposits on stainless steel samples, B.I. Kougias, P. D. Natsi, P.G. Koutsoukos, 12<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2019, Athens
32. Dissolution of calcium deposits from hydrophilic intraocular lenses: Mechanism of dissolution, P.S. Gartaganis, A. Tziolas, P.D. Natsi, S.P. Gartaganis, I.P. Giannakis, E. Karmiris, P.G. Koutsoukos, 36<sup>th</sup> International Congress of the Hellenic Society of Intraocular Implant and Refractive Surgery, 2022, Athens
33. Innovative Training Centre for Advanced third level course in Azerbaijan/ ITACA, P.G. Koutsoukos, C.A. Paraskeva, P.G. Klepetsanis, P.D. Natsi, 13<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2022, Patras.
34. Recovery of phosphorus from municipal aqueous wastewater, P.D. Natsi, K. Goudas, P.G. Koutsoukos, 13<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2022, Patras
35. Clarification of calcified hydrophilic intraocular lenses: the role of the presence of ascorbic acid, J.S. Kalantzis, A. Tziolas, P.D. Natsi, P.S. Gartaganis, S.P. Gartaganis, P.G. Koutsoukos, 13<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2022, Patras
36. Surface modification of intraocular lenses with graphene oxide, P.D. Natsi, E. Zande, M. Kanakis, P.S. Gartaganis, S.P. Gartaganis, P.G. Koutsoukos, 13<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2022, Patras
37. Calcification of hydrophilic intraocular lenses and the role of surface charge, G. Ziomas, T. Kourasi, P.D. Natsi, J. Kalantzis, P.S. Gartaganis, S.P. Gartaganis, P.G. Koutsoukos, 13<sup>th</sup> Panhellenic Scientific Conference on Chemical Engineering, 2022, Patras

### *Participation in research projects*

**9/2021-today:** ERASMUS+, KA-2 Action ITACA: Innovative Training Center to support 3rd cycle Advanced Educations Course to face Environmental Emergency in Azerbaijan

**5/2020-8/2020:** PERAN: Innovative actions in Environmental Research and Development, Programme Competitiveness Entrepreneurship Innovation (EPAnEK)

**9/2019-3/2020:** INVALOR: Research Infrastructure for Waste Valorization and Sustainable Management of Resources

**7/2014-7/2015:** ARISTEIA II, Theoretical and experimental study of the controlled precipitation of inorganic salts in granular and consolidated porous media (SPM), ESPA 2007-2013

### *Research interests*

- Scale formation. Crystal growth and Dissolution of Soluble Salts.
- Corrosion and Scaling in Geothermal
- Scale Formation and Prevention in Industrial Processes
- Fouling in Aquatic Systems
- Physicochemical processes in natural waters
- Phosphorus Recovery from Wastewater.
- Fundamental Scientific Aspects for the Development of Protection and Restoration Methods for Historic monuments based on the mechanisms of deterioration.
- Biological Mineralization: Mechanisms of formation of biominerals on biomaterials.