# Zoi S. METAXA

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## 1 CURRICULUM VITAE

| CURRENT POSITION | |
|---|---|
| **30/09/2019 – now** | **Assistant Professor**<br>Democritus University of Thrace / Department of Chemistry, Hephaestus Laboratory, Kavala, Greece |

| PREVIOUS POSITION(S) | |
|---|---|
| **10/2016 – 09/2019** | **Research Associate**<br>Collaborating researcher at the Hephaistos Laboratory, Department of Petroleum and Natural Gas Technology Engineering and Mechanical Engineering, T.E.I. Eastern Macedonia and Thrace, Kavala, Greece |
| **10/2018 – 03/2019** | **Academic Scholar**<br>Researcher and lecturer at the Civil Engineering Department, University of West Attica, Greece |
| **02/2014 – 09/2019** | **Research Associate**<br>Collaborating researcher at the Laboratory of Strength of Materials, School of Applied Mathematics and Natural Sciences, National University of Athens, Zografou, Greece |
| **09/2013 – 12/2015** | **Research Associate**<br>Collaborating researcher at the Laboratory of Structural Engineering and Elements of Technical Projects, School of Agricultural Surveying Engineering, National University of Athens, Greece |
| **09/2009 – 12/2012** | **Research Assistance**<br>Laboratory assistant at the Technical Engineering Laboratory, Department of Engineering, Department of Civil Engineering, Democritus University of Thrace, Xanthi, Greece |
| **11/2007 – 10/2010** | **Research Assistance**<br>Visiting Predoctoral Fellow at the Center of Advanced Cement Based Materials, Robert R. McCormick School of Engineering and Applied Science, Northwestern University, Chicago, USA |

## EDUCATION

| | |
|---|---|
| **2013-2015** | Post-Doc Research: School of Agronomists and Topographical Engineers, National Technical University of Athens, Greece. Post-Doc Thesis title: "Development of innovative building materials with the ability to monitor their structural integrity" |
| **2008 -2012** | Ph.D.: Polytechnic School in Xanthi, Department of Civil Engineering, Democritus University of Thrace, Greece, Ph.D. Thesis title: "Mechanical Behavior and Durability of Advanced Cement Based Materials", Grade: Excellent |
| **2006 -2007** | M.S.: Polytechnic School in Xanthi, Department of Civil Engineering, Democritus University of Thrace, Greece, Master program: "New materials and technologies in reinforced concrete design", Grade: 9,45/10 |
| **2000 -2005** | B.S.: Polytechnic School in Xanthi, Department of Civil Engineering, Democritus University of Thrace, Diploma thesis title: "Debonding of Sandwich Beams with Foam Core", Grade: 7.53/10 |

## PUBLICATIONS

1. Zeimpekis, V., Gialos, A., Dimou, A.E., Charalampidou, C.M., Asimakopoulos, G., Karatasios, I., Gournis, D., Karakassides, M.A., Metaxa, Z.S., Kourkoulis, S.K., Alexopoulos, N.D., Sustainable lime-based nano-reinforced pastes for structural health monitoring of the restoration areas of Monuments of Cultural Heritage. Construction and Building Materials 480, 141456 (2025) https://doi.org/10.1016/j.conbuildmat.2025.141456.
2. Stogia, M.-E., Pasiou, E. D., Metaxa, Z. S., Kourkoulis, S. K., Alexopoulos, N. D. Ternary Restoration Binders as Piezoresistive Sensors: The Effect of Superplasticizer and Graphene Nanoplatelets' Addition. *Nanomaterials* 15(7), 538 (2025). https://doi.org/10.3390/nano15070538.
3. Metaxa, Z.S., Kytinou, V.K., Prokopiou, V.D., Zapris, A.G., Apostolidou, E., Alexopoulos, N.D. Novel extruded polystyrene lightweight thermoinsulating cement mortar: Experimental investigation of the mechanical behaviour. Procedia Structural Integrity 68, pp. 184-189 (2025) https://doi.org/10.1016/j.prostr.2025.06.040.
4. Kytinou, V.K., Metaxa, Z.S., Zapris, A.G., Kosheleva, R.I., Prokopiou, V.D., Alexopoulos, N.D. Exploitation of extruded polystyrene (XPS) waste for lightweight, thermal insulation and rehabilitation building applications. *Developments in the Built Environment* 20, 100580 (2024). https://doi.org/10.1016/j.dibe.2024.100580.
5. Pringopoulos, T.A., Thomoglou, A.K., Fantidis, J.G., Thysiadou, A.A., Metaxa, Z.S. Advanced Lime Mortars for Historical Architectural Structures. *Engineering Proceedings*, 70(1), 58 (2024). https://doi.org/10.3390/engproc2024070058
6. Foudas, A., Kyzas, G.Z., Metaxa, Z.S., Mitropoulos, A.C. The effect of nanobubbles on Langmuir-Blodgett films. *Journal of Colloid and Interface Science* 669, pp. 327-335 (2024). https://doi.org/10.1016/j.jcis.2024.04.233
7. Maroulas, K.N., Trikkaliotis, D.G., Metaxa, Z.S., AbdelAll, N., Alodhayb, A., Khouqeer, G.A., Kyzas, G.Z. Super-hydrophobic chitosan/graphene-based aerogels for oil absorption. *Journal of Molecular Liquids* 390, pp. 123071 (2023). https://doi.org/10.1016/j.molliq.2023.123071
8. Tziviloglou, E., Metaxa, Z.S., Maistros, G., Kourkoulis, S.K., Karousos, D., Favvas, E.P., Alexopoulos, N.D. Electrochemical Impedance as an Assessment Tool for the Investigation of the Physical and Mechanical Properties of Graphene-Based Cementitious Nanocomposites. *Nanomaterials* 13(19), 2652 (2023). https://doi.org/10.3390/nano13192652
9. Thomoglou, A.K., Fantidis, J.G., Voutetaki, M.E., Metaxa, Z.S., Chalioris, C.E. Mechanical Characterization of Nano-Reinforced Mortar: X-ray Micro-CT for 3D Imaging of Microstructure. *Engineering Proceedings* 41(1), 4 (2023). https://doi.org/10.3390/engproc2023041004

10. Prokopiou, V., Metaxa, Z.S. Micro-oxydation of wine in a ceramic vessel with CNT. *Materials Today: Proceedings* 93 (4), pp. 772-778 (2023). https://doi.org/10.1016/j.matpr.2023.07.003
11. Pavlopoulou, L.-Ch., Dimou, A.E., Stogia, M.-E., Metaxa, Z.S., Kourkoulis, S.K., Alexopoulos, N.D. Lime-based nanocomposites for masonry restoration: Towards the implementation of small-scale restoration. *Materials Today: Proceedings* 93 (4), pp. 761-766 (2023). https://doi.org/10.1016/j.matpr.2023.06.348
12. Vasileiou, E., Pavlopoulou, L.-Ch., Dimou, A.E., Karatasios, I., Metaxa, Z.S., Asimakopoulos, G. Andrikopoulos, A., Zeimpekis, V., Alexopoulos, N.D. On the economic evaluation of restoration activities of modern monuments of cultural heritage with piezoresistive nanocomposites. *Materials Today: Proceedings* 93 (4), pp. 614-617 (2023). https://doi.org/10.1016/j.matpr.2023.03.773
13. Dimou, A.E., Metaxa, Z.S., Kourkoulis, S.K., Alexopoulos, N.D., Piezoresistive properties of natural hydraulic lime binary pastes with incorporated carbon-based nanomaterials under cyclic compressive loadings. *Nanomaterials* 12 (20), 3695 (2022). https://doi.org/10.3390/nano12203695
14. Patrinou, A., Tziviloglou, E., Varoutoglou, A., Favvas, E., Kyzas, G.Z., Metaxa, Z.S., Cement Composites with Graphene Nanoplatelets and Recycled Milled Carbon Fibers Dispersed in Air Nanobubble Water. *Nanomaterials* 12 (16), 2786 (2022). https://doi.org/10.3390/nano12162786
15. Dimou, A.E., Asimakopoulos, G., Karatasios, I., Gournis, D., Metaxa, Z.S., Kourkoulis, S.K, Alexopoulos, N.D., Self-diagnostic lime-pozzolan-cement restoration nanocomposites: Effect of graphene modification and cyclic loading level under compression. *Developments in the Built Environment* 10, pp. 100068 (2022). https://doi.org/10.1016/j.dibe.2022.100068
16. Metaxa, Z.S., Boutsioukou, S., Amenta, M., Favvas, E.P., Kourkoulis, S.K., Alexopoulos, N.D., Dispersion of Multi-Walled Carbon Nanotubes into White Cement Mortars: The Effect of Concentration and Surfactants. *Nanomaterials* 12(6), pp. 1031 (2022). https://doi.org/10.3390/nano12061031
17. Dimou, A.E., Metaxa, Z.S., Kourkoulis, S.K., Karatasios, I., Alexopoulos, N.D., Tailoring the binder matrix of lime-based binders for restoration interventions with regard to mechanical compatibility Construction and Building Materials 315, pp. 125717 (2022). https://doi.org/10.1016/j.conbuildmat.2021.125717
18. Dimou, A.-E., Metaxa, Z.S., Alexopoulos, N.D., Kourkoulis, S.K., Assessing the potential of nano-reinforced blended lime-cement pastes as self-sensing materials for restoration applications. *Materials Today: Proceedings* 62, pp. 2482-2487 (2022). https://doi.org/10.1016/j.matpr.2022.02.623
19. Amenta, M., Metaxa, Z.S., Papaioannou, S., Katsiotis, M.S., Kilikoglou, V., Kourkoulis, S.K., Karatasios, I., Quantitative evaluation of self-healing capacity in cementitious materials. *Material Design and Processing Communications* 152, pp. 1-7 (2021). https://doi.org/10.1002/mdp2.152
20. Metaxa, Z.S., Tolkou, A.K., Efstathiou, S., Rahdar, A., Favvas, E.P., Mitropoulos, A.C., Kyzas, G.Z., Nanomaterials in Cementitious Composites: An Update. *Molecules* 26(5), pp.1430 (2021). https://doi.org/10.3390/molecules26051430
21. Anastopoulos, S., Givannaki, F., Papanikos, P., Metaxa, Z.S., Alexopoulos, N.D., Calculation of a composite material's modulus of elasticity: Comparison of results using fixed angles orientation and RVE with those using random orientation tensor and multi-step homogenization. *Procedia Structural Integrity* 28, pp. 2132-2141 (2020). https://doi.org/10.1016/j.prostr.2020.11.040
22. Dimou, A.-E., Charalampidou, C.-M., Metaxa, Z.S., Kourkoulis, S.K., Karatasios, I., Asimakopoulos, G., Alexopoulos, N.D., Mechanical and electrical properties of hydraulic lime pastes reinforced with carbon nanomaterials. *Procedia Structural Integrity* 28, pp. 1694–1701 (2020). https://doi.org/10.1016/j.prostr.2020.10.144
23. Metaxa, Z.S., Kourkoulis, S.K., Dispersion of graphene nanoplatelets reinforcing type II cement paste. *Procedia Structural Integrity* 13, pp. 2011-2016 (2018). https://doi.org/10.1016/j.prostr.2018.12.215

24. Metaxa, Z.S., Neri, W., Poulin, P., Alexopoulos, N.D., Strain monitoring of cement-based materials with embedded polyvinyl alcohol - carbon nanotube (PVA-CNT) fibers. *Frattura ed Integrità Strutturale* 40, pp. 61-73 (2017). http://dx.doi.org/10.3221/IGF-ESIS.40.06
25. Z. S. Metaxa, E. D. Pasiou, I. Dakanali, I. Stavrakas, D. Triantis, S. K. Kourkoulis, Carbon nanotube reinforced mortar as a sensor to monitor the structural integrity of restored marble epistyles under shear. *Procedia Structural Integrity*, 2, 2833-2840 (2016). https://doi.org/10.1016/j.prostr.2016.06.354
26. Z. S. Metaxa, Exfoliated graphene nanoplatelet cement based nanocomposites as piezoresistive sensors - influence of nanoreinforcement lateral size on monitoring capability. *Ciência & Tecnologia dos Materiais*, 28, 73-79 (2016). https://doi.org/10.1016/j.ctmat.2015.12.001
27. Z. S. Metaxa, Polycarboxylate based superplasticizers as dispersant agents for exfoliated graphene nanoplatelets reinforcing cement based materials *Journal of Engineering Science and Technology Review* 8, pp. 1-5 (2015).
28. Z. S. Metaxa, M. S. Konsta-Gdoutos, S. P. Shah, Carbon nanofiber cementitious composites: effect of debulking procedure on dispersion and reinforcing efficiency. *Cement and Concrete Composites*, 36, 25-32 (2013). https://doi.org/10.1016/j.cemconcomp.2012.10.009
29. Z. S. Metaxa, J.-W.T. Seo, M. S. Konsta-Gdoutos, M. C. Hersam, S. P. Shah, Highly Concentrated Carbon Nanotube Suspensions for Cementitious Materials. *Cement and Concrete Composites*, 34, 612-617 (2012). https://doi.org/10.1016/j.cemconcomp.2012.01.006
30. Z. S. Metaxa, M.S. Konsta-Gdoutos, S.P. Shah, Carbon nanofiber-reinforced cement-based materials *Transportation Research Record: Journal of the Transportation Research Board* 2142, pp. 114-118 (2010). https://doi.org/10.3141/2142-17
31. M. S. Konsta-Gdoutos, Z. S. Metaxa, S. P. Shah, Multi-scale Mechanical and Fracture Characteristics and Early-age Strain Capacity of High Performance Carbon Nanotube/Cement Nanocomposites. *Cement and Concrete Composites*, 32, 110-115 (2010). https://doi.org/10.1016/j.cemconcomp.2009.10.007
32. M. S. Konsta-Gdoutos, Z. S. Metaxa, S. P. Shah SP, Highly Dispersed Carbon Nanotube Reinforced Cement Based Materials. *Cement and Concrete Research*, 40, 1052-1059 (2010). https://doi.org/10.1016/j.cemconres.2010.02.015

**CONFERENCES/WORKSHOPS/etc**

1. Z. S. Metaxa, V.K. Kytinou, V. D. Prokopiou, A. G. Zapris, E. Apostolidou, N.D. Alexopoulos, Novel XPS lightweight thermoinsulating cement mortar: Experimental investigation of the mechanical behaviour. European Conference on Fracture 2024, Zagreb, Croatia, 2024.
2. L. Grigoriadis, M. Amenta, E. Christodoulou, A. Ekmektsis, A. C. Mitropoulos, Z. S. Metaxa, Environmental friendly mortar with waste marble sand. International Conference Micro Nano 2023, Athens, Greece, 2023.
3. M.-E. Stogia, Z. S. Metaxa, S. K. Kourkoulis, N. D. Alexopoulos, Resistivity variation of carbon-based nanomaterials in lime-based restoration pastes. International Conference Micro Nano 2023, Athens, Greece, 2023.
4. E. Tziviloglou, Z. S. Metaxa, G. Maistros, S. Kourkoulis, N. Alexopoulos, Assessment of Fracture Toughness in Cementitious Graphene Nanocomposites via Electrical Impedance Analysis, 2nd Panhellenic Workshop on Inorganic Chemistry, Athens, Greece, 2023.
5. V. K. Kytinou, V. Prokopiou, Z. S. Metaxa, E. Apostolidou, V. Zeimpekis, N. D. Alexopoulos, Enhancing thermal insulation and sustainability of cement mortar through incorporation of waste extruded polystyrene (XPS): mechanical properties, economic analysis and carbon footprint assessment, 39th Danubia-Adria Symposium on Advances in Experimental Mechanics – DAS39, Siófok, Hungary, 2023.

6. N. D. Alexopoulos, A. Filippidis, D. Lekkas, Z. S. Metaxa, V. Prokopiou, EPS waste management from coastal cleaning actions: identification of contamination sources, collection, treatment, and re- use in cement-based materials, 18th International Conference on Environmental Science and Technology - CEST18, Athens, Greece, 2023.
7. Z. S. Metaxa, A. Rafailidis, D. Papaevaggelou, E. Christodoulou, A. Ekmektsis, A. Mitropoulos, Cementitious demonstrator with graphene nanoplatelets for smart de-icing pavement applications, in Proceedings of the 38 Danubia-Adria Symposium on Advances in Experimental Mechanics, Poros, Greece, 2022.
8. A. Patrinou, E. Tziviloglou, Z. S. Metaxa, Graphene nanoplatelets and recycled milled carbon fibers hybrid composites for multi scale cement paste reinforcement, in Proceedings of the 38 Danubia-Adria Symposium on Advances in Experimental Mechanics, Poros, Greece, 2022.
9. Prokopiou, V., Z. S. Metaxa, Micro-oxydation of wine in ceramic vessels with CNTs, in Proceedings of the 38 Danubia-Adria Symposium on Advances in Experimental Mechanics, Poros, Greece, 2022
10. E. Christodoulou, E. Karamfyllidou, G. Z. Kyzas, A. C. Mitropoulos, Z. S. Metaxa, Carbon based nanomaterials from food waste as reinforcement in cement-based materials, in Proceedings of the ECF23, European Conference on Fracture 2022, Madeira, Portugal, 2022.
11. A. Ekmektsis, A. Rafailidis, A. C. Mitropoulos, Z. S. Metaxa, Carbon based cementitious nanocomposites for de-icing applications, in Proceedings of the ECF23, European Conference on Fracture 2022, Madeira, Portugal, 2022.
12. E. Christodoulou, M. Amenta, Z. S. Metaxa, D. Papaevaggelou, S. K. Kourkoulis, A. Ekmektsis, A. C. Mitropoulos, Use of marble crushed sand in cementitious materials, in Proceedings of the 2nd Mediterranean Conference on Fracture and Structural Integrity, MedFract2, February 2022.
13. Z. S. Metaxa, E. P. Favvas, A. C. Mitropoulos, Dispersing Carbon Nanomaterials facilitating aqueous air nanobubble solutions for use in cement based materials, in Proceedings of the 1st Virtual European Conference on Fracture (VECF1), June 2020.
14. E. Christodoulou, Z. S. Metaxa, O. Theocharidis, A. Ekmektsis, A. C. Mitropoulos, Partial replacement of cement by waste marble slurry, in Proceedings of the 1st Virtual European Conference on Fracture (VECF1), June 2020.
15. Z. S. Metaxa, S. Boutsioukou, Multi-Walled Carbon Nanotube White Cement-Based Mortars for the Restoration of Cultural Heritage Monuments, in Proceedings of the 1st International Conference of the GREEK SOCIETY OF EXPERIMENTAL MECHANICS OF MATERIALS Athens, Greece, May 10-12, 2018, pp. 153-154.
16. Z. S. Metaxa, S. K. Kourkoulis, Electrical Resistance Change as a health Monitoring Tool in Graphene Cementitious Nanocomposites, in Proceedings of the ICEM2018: 18TH INTERNATIONAL CONFERENCE ON EXPERIMENTAL MECHANICS, Brussels, Belgium, July, 2018.
17. Z. S. Metaxa, S. K. Kourkoulis, Cement Based Nanocomposites with Self-Diagnostic Characteristics, in Proceedings of the 21st International Conference on Composite Materials, Xi'an, 20-25th August 2017.
18. Z. S. Metaxa, Structural Health Monitoring of Cement Based Materials Reinforced with Graphene Nanoplatelets, In Proceedings of the 20th International Conference on Composite Materials, Copenhagen, Denmark, 19-24 July 2015.
19. N.D. Alexopoulos, S. Boutsioukou, F. Giannakopoulou, Z. S. Metaxa, S.K. Kourkoulis, "Reinforcement at the nanoscale of cementitious materials made from white cement with multiwall carbon nanotubes", In Proceedings from the 6th International Conference on Mechanics and Materials in Design (M2D2015), Azores, Portugal, 26-30 July 2015.
20. Z. S. Metaxa, S. Boutsioukou, S. Nitodas, S. K. Kourkoulis, Nano-additions of multiwall carbon nanotubes in white cement for restoration of monuments of Cultural Heritage, In Proceedings from the

International Conference of Science in Technology (SCinTE2015), Volume 1 / Topic A: Applied Mechanics, Civil and Energy Engineering, ISBN: 978-618-5208-01-1, pp. 133-135.

21. S. F. Nitodas, S. K. Kourkoulis, Z. S. Metaxa, N. D. Alexopoulos, S. Boutsioukou, P. Mimigianni, Use of Multi-Wall Carbon Nanotubes in Cement-Based Materials for the Real-Time Monitoring of Smart Structures, in Proceedings of the 2015 AIChE Annual Meeting, November, 2015, Salt Lake City, UT, USA.
22. Z. S. Metaxa, Structural Health Monitoring of Cement Based Materials Reinforced with Graphene Nanoplatelets, In Proceedings of the 20th International Conference on Composite Materials, Copenhagen, Denmark, 19-24 July 2015.
23. N.D. Alexopoulos, S. Boutsioukou, F. Giannakopoulou, Z. S. Metaxa, S.K. Kourkoulis, "Reinforcement at the nanoscale of cementitious materials made from white cement with multiwall carbon nanotubes", In Proceedings from the 6th International Conference on Mechanics and Materials in Design (M2D2015), Azores, Portugal, 26-30 July 2015.
24. Z. S. Metaxa, S. Boutsioukou, S. Nitodas, S. K. Kourkoulis, Nano-additions of multiwall carbon nanotubes in white cement for restoration of monuments of Cultural Heritage, In Proceedings from the International Conference of Science in Technology (SCinTE2015), Volume 1 / Topic A: Applied Mechanics, Civil and Energy Engineering, ISBN: 978-618-5208-01-1, pp. 133-135.
25. Z.S. Metaxa, E.P. Favvas, C. Mercader, F. Poulin and N.D. Alexopoulos, "A preliminary study on the development of graphene/cement based nanocomposites", In CD-ROM Proceedings of the 39th Solid Mechanics Conference (SOLMECH) Zakopane, Poland, 1-5 September 2014, P130.
26. Z.S. Metaxa, N.D. Alexopoulos, P. Papanikos, C. Stergiou, "Tensile mechanical behaviour of aeronautical 2024 and 2198 aluminum alloys after corrosion exposure", In Proceedings of the 4th International Conference on Integrity, Reliability and Failure, Funchal, Portugal, 23-27 June 2013, p. 237.
27. Z. S. Metaxa, M. S. Konsta-Gdoutos, S. P. Shah, "Carbon nanofiber cementitious composites: effect of debulking procedure on dispersion and reinforcing efficiency," In: Konsta-Gdoutos MS, editor. Proceedings of the 4th International Symposium on Nanotechnology in Construction, NICOM4, May 20 – 22, Agios Nicolaos, Greece.
28. Z. S. Metaxa, S. Boutsioukou, S. Nitodas, S. K. Kourkoulis, Nano-additions of multiwall carbon nanotubes in white cement for restoration of monuments of Cultural Heritage, In Proceedings from the International Conference of Science in Technology (SCinTE2015), Volume 1 / Topic A: Applied Mechanics, Civil and Energy Engineering, ISBN: 978-618-5208-01-1, pp. 133-135.
29. S. P. Shah, M. S. Konsta-Gdoutos, Z. S. Metaxa, Advanced Cement Based Nanocomposites, In: Kounadis AN, Gdoutos EE, editors. Recent Advances in Mechanics, Springer, pp. 313-327.
30. Shah, S.P., Konsta-Gdoutos, M.S., and Metaxa, Z.S., Fiber Reinforced Concrete: from Macro to Nanoscale, Proceedings of the 9th International Symposium on High Performance Concrete, August 9-11, 2011, New Zealand.
31. M. S. Konsta-Gdoutos, Z. S. Metaxa, Mechanical and Fracture Properties of Cementitious Materials Reinforced at the Nano and Microscale, In: Panasyuk VV, Gdoutos EE, Bobalo YuYa, editors. Proceedings of the Second Ukrainian-Greek Symposium on Fracture Mechanics of Materials and Structures, pp. 87-88.
32. Z. S. Metaxa, Fracture Characteristics of Cementitious Materials Reinforced with Carbon Nanoscale Fibers, In: Gdoutos EE, Konsta-Gdoutos MS, editors. Proceedings of the First Greek – Russian Symposium on Advanced Solid and Fracture Mechanics October 10 – 13, Xanthi, Greece (2011).
33. Z. S. Metaxa, M. S. Konsta-Gdoutos, S. P. Shah, Mechanical Properties and Nanostructure of Cement Based Materials Reinforced with Carbon Nanofibers and PVA Microfibers, ACI Special Publication 270: Advances in the Material Science of Concrete, SP-270-10, 115-124.
34. S. P. Shah, M. S. Konsta-Gdoutos, Z. S. Metaxa, Exploration of Fracture Characteristics, Nanoscale Properties and Nanostructure of Cementitious Matrices with Carbon Nanotubes and Carbon

Nanofibers, Proceedings of the 7th International Conference on Fracture Mechanics of Concrete and Concrete Structures, FramCos-7, May 23-28, 2010 Jeju, Korea.

35. M. S. Konsta-Gdoutos, Z. S. Metaxa, S. P. Shah, Multiscale Fracture Characteristics of Cement Based, Materials Reinforced with Carbon Nanofibers, Proceedings of the International Conference: 18th European Conference of Fracture, ECF18, edited by V. Mechterine, Dresden, Germany
36. Z. S. Metaxa, M. S. Konsta-Gdoutos, S. P. Shah, Mechanical Properties and Nanostructure of Cement Based Materials Reinforced with Carbon Nanofibers and PVA Microfibers, ACI Special Publication 270: Advances in the Material Science of Concrete, SP-270-10, 115-124.
37. S. P. Shah, M. S. Konsta-Gdoutos, Z. S. Metaxa, P. Mondal, Nanoscale modification of cementitious materials, In: Bittnar Z, Bartos PJM, Nemecek J, Smilauer V, Zeman J, editors. Nanotechnology in construction 3. Springer, pp. 125-130.
38. Z. S. Metaxa, M. S. Konsta-Gdoutos, S. P. Shah, Carbon Nanotubes Reinforced Concrete, ACI Special Publication on Nanotechnology of Concrete: The Next Big Thing is Small, SP-267-2, 2009, pp. 11-20.
39. S. P. Shah, M. S. Konsta-Gdoutos, Z. S. Metaxa, P. Mondal, Nanoscale modification of cementitious materials, In: Bittnar Z, Bartos PJM, Nemecek J, Smilauer V, Zeman J, editors. Nanotechnology in construction 3. Springer, 2009, pp. 125-130.
40. M. S. Konsta-Gdoutos, Z. S. Metaxa, S. P. Shah, Nanoimaging of Highly Dispersed Carbon Nanotube Reinforced Cement Based Materials, In: Gettu R., editor. Proceedings of the Seventh International RILEM Symposium on Fiber Reinforced Concrete: Design and Applications, RILEM Publications S.A.R.L., 2008, pp. 125-131
41. E. E. Gdoutos, Z. S. Metaxa, Kinking of an Interfacial Crack in Sandwich Beams, Proceedings of the SEM Annual Conference and Exposition on Experimental and Applied Mechanics 3, 2007, pp. 1431-1439.
42. M. S. Konsta-Gdoutos, I. M. Daniel, Z. S. Metaxa, J. Cho, Thermo-Mechanical Characterization of Epoxy/Silica Nanocomposites, Experimental Analysis of Nano and Engineering Materials and Structures, Proc. 13th International Conference on Experimental Mechanics, Alexandroupolis, Greece, edited by E. E. Gdoutos, Springer, Netherlands, 2007, pp. 43-44.

## MEMBERSHIPS & REVIEWING ACTIVITIES

**MEMBERSHIPS:**

| | |
|---|---|
| **2010 - now** | American Concrete Institute (ACI) |
| **2012 – now** | ACI Technical Committee 236-D Material Science-Nanotechnology of Concrete |
| **2012 - now** | American Nano-Society |
| **2017 - now** | European Structural Integrity Society |
| **2018 - now** | Greek Society of Experimental Mechanics of Materials |
| **2006 - now** | Technical Chamber of Greece |

**REVIEWING ACTIVITIES**

Construction and Building Materials (Elsevier)

Cement and Concrete Composites (Elsevier)

Cement and Concrete Research (Elsevier)

Composites Science and Technology (Elsevier)

Journal of Composite Materials (SAGE)

KSCE Journal of Civil Engineering (Springer)

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|---|
| Materials and Design (Elsevier) |
| Materials (MDPI) |
| Polymers (MDPI) |
| Environmental Science and Pollution Research (Springer) |
| International Journal of Structural Integrity (Emerald) |

**TEACHING ACTIVITIES**

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|---|---|
| **10/2019 – now** | ***Undergraduate courses at:***<br>Chemistry Department:<br>• Strength of materials (theory+laboratory)<br>• Materials Characterization (theory+laboratory)<br>• Inorganic Materials Chemistry<br>• Chemistry Terminology in a Foreign Language<br>Department of Petroleum, Natural Gas Technology and Mechanical Engineering:<br>• Strength of Materials<br>• Materials Technology<br>• Vehicle Engineering<br>• Computer-aided design (laboratory)<br>• English (Technical terminology) (theory-laboratory)<br>***Postgraduate courses at:***<br>MPhil in Nanotechnology:<br>• Research Methodology<br>• Nanotechnology – Nanomaterials<br>MSc in Oil and Gas Technology:<br>• Risk Analysis and Manufacturing Cost<br>• Oil Well Cementing<br>MSc in Cosmetic Chemistry<br>• Research Methodology<br>MSc in quality, safety, security, health and environmental management:<br>• Manufacturing Cost |
| **2018 – 2019** | Strength of Materials course at the Department of Civil Engineering, University of West Attica |
| **2018 – 2019** | Structural Materials course (laboratory) in the Department of Civil Engineering, University of West Attica |
| **2012– 2013** | Tutorial exercises Structural Engineering II course, School of Architectural Engineering, National Technical University of Athens |
| **2006– 2007**<br>**2010– 2013** | Tutorial exercises Solid Body Mechanics I course, Department of Civil Engineering, Democritus University of Thrace |
| **2012– 2013** | Tutorial exercises Solid Body Engineering II course, Department of Civil Engineering, Democritus University of Thrace |
| **2010– 2012** | Tutoring exercises postgraduate course Experimental Engineering, Department of Civil Engineering, Democritus University of Thrace |

| SUPERVISION OF GRADUATE STUDENTS & POSTODOCTORAL FELLOWS | |
|---|---|
| **10/2019 - now** | 2 PhD Students main supervisor (Prokopiou V. / Priggopoulos T.)<br>4 PhD Students committee member (Fountas A. / Mpai M. / Kole S. / Prokopiou S.<br>10 Master Students (Mpelimpasaki N. / Chovolos N. / Liourmpas N. / Solomou G. / Soultanides Th. / Patrinou A. / Karamfyllidou E. / Rafailidis A. / Prokopiou V. / Georgiadis L.)<br>Chemistry Department/Democritus University of Thrace/Greece |

| FELLOWSHIPS and AWARDS | |
|---|---|
| **2015-2016** | Scholarship: Eastern Macedonia and Thrace Institute of Technology fellowships for assisting young scientists in prototyping innovative products by using cutting-edge technology, with the exclusive support of Stavros Niarchos Foundation |
| **2013-2015** | Scholarship of the Foundation of State Scholarships (I.KY.) for the preparation of post-doctoral research in Greece. Title: Development of innovative building materials with the ability to monitor their structural integrity |
| **2009-2011** | Pericles S. Theohari Scholarship |
| **2016** | Award: European Conference o Fracture - ECF21, ESIS Support for Researchers Award. |
| **2018** | Award: 18th International Conference on Experimental Mechanics - ICEM2018, EURASEM - ICEM18 Conference attendance award 2018. |

**RESEARCH GRANTS**

| Project Title | Funding source | Period | Role at the project |
|---|---|---|---|
| Multi-Material Design using 3D Printing – MADE-3D | Horizon Europe | 2023-2026 | Material characterization |
| Recycling and reuse of polymer foams in cement-based materials – COAST EPS | Green Pay Greece | 2023-2025 | Associate Principal Investigator (PI) responsible for: polystyrene characterization, composites development and characterization |
| Advanced nanostructured materials for sustainable growth: Green energy production/storage, energy saving and environmental remediation | European Union - Greece 2.0 | 2023-2025 | Participation at materials' charactherization |
| Building Ecosystem Integration Labs at HEI to foster Smart Specialization and Innovation on Sustainable Raw Materials, HEI4S3-RM | EIT (European Institute of Innovation & Technology) | 2022-2024 | Mentoring and training on staff and students |
| Nanoreinforced concrete for pavement deicing – NEA ODOS | Project RESEARCH - CREATE - INNOVATE | 2018-2022 | Technical coordinator, responsible for: nanocomposites development and characterization / pilot application / proposal submission |

| | | | |
|---|---|---|---|
| Utilization of marble byproducts to enhance cement based materials - MARMAROTSIMENTO | Investment innovation plans for research and development companies in the quarrying sector | 2018-2022 | Associate Principal Investigator (PI) responsible for: marble byproducts characterization, composites development and characterization |
| Self-healing and self-sensing nano-composite conservation mortars - AKEISTHAI | Project RESEARCH - CREATE - INNOVATE | 2018-2022 | Responsible for: nanocomposites development and characterization |
| Real time non-destructive structural health monitoring and damage assessment of concrete structures using smart self-sensing cement based hybrid nanocomposites – Nano cement sensor | Eastern Macedonia and Thrace Institute of Technology fellowships for assisting young scientists in prototyping innovative products by using cutting-edge technology | 2016-2018 | Principal Investigator (PI), responsible for project implementation, development of sensor made from cementitious matrix and graphene nanoplatelets (GnPs) |
| Monitoring of the structural integrity of restored structural parts in ancient monuments of cultural heritage by employing hybrid materials reinforced with carbon nanotubes | Support new companies for research and development actions | 2014-2015 | Technical coordinator, responsible for: nanocomposites development and characterization / pilot application |
| Development of innovative cement based nanocomposites with stress/strain sensing capabilities | IKY fellowships of excellence for postgraduate studies in Greece–Siemens Program | 2013-2015 | Principle Investigator (PI) responsible for project implementation, development and study of the electrical and piezoresistive properties of cementitious nanocomposites with GnPs |
| Experimental and theoretical investigation of mechanical properties degradation of the aeronautical aluminum alloy 2024 due to corrosion | Research Program EPEAEK - Archimedes III | 2013-2015 | Researcher, responsible for: alluminum alloys artificial aging and corrosion |
| Center for Multifunctional Nanocomposite Construction Materials | THALIS Project | 2012-2015 | Researcher, responsible for the development and characterization of cement-based nanocomposites with carbon nanotubes (CNTs) and nanofibers |
| Production and mechanical characterization of nanocomposite materials | Democritus university of Thrace | 2011 | Researcher, measurement of the piezoresistive properties of CNT/cement nanocomposites |
| Pericles S. Theohari Scholarship | Pericles S. Theohari Foundation | 2009-2011 | Researcher, perform PhD thesis research |
| Crack free concrete made with nanofiber reinforcement | Northwestern University, Transportation research board | 2007-2010 | Researcher responsible for the implementation of the project |

## 2 SCIENTIFIC ACHIEVEMENTS

- ✓ 32 publications in peer-reviewed international **journals** (2.360 citations with excluded self-citations with an Hirsch index **(h-index) = 13**, as searched in 21/08/2025 with Scopus engine) Scopus Author ID: 22980975400 https://www.scopus.com/authid/detail.uri?authorId=22980975400
- ✓ https://www.researchgate.net/profile/Zoi-Metaxa
- ✓ https://orcid.org/my-orcid?orcid=0000-0001-6588-4298

***Granted patents***

1. "Highly dispersed carbon nanotube reinforced cement based materials", by S.P. Shah, M.S. Konsta-Gdoutos and Z.S. Metaxa, US Patent and Trademark Office, Patent US9365456 B2.
2. "Highly Concentrated Carbon Nanotube Suspensions for Cementitious Materials and Method of Reinforcing Such Materials", by M. C. Hersam, J.-W.T. Seo, S. P. Shah, M. S. Konsta-Gdoutos and Z. S. Metaxa, US Patent and Trademark Office, Patent US8865107 B2
3. "Sensors made of cement-based nanocomposite materials for continuous and non-destructive testing of the structural integrity of concrete structures in real time", by Z.S. Metaxa, S.K. Kourkoulis, E.P., Favvas, A.C. Mitropoulos, Hellenic Industrial Property Organization, 20170100137.
4. Method and device for nanobubble production, A.C. Mitropoulos, A. Varoutoglou, B. Mitridis, Z. Metaxa, Hellenic Industrial Property Organization, 1010591.

***Awards***

- European *Conference o Fracture - ECF21, ESIS Support for Researchers Award*
- *18th International* Conference *on Experimental Mechanics - ICEM2018, EURASEM - ICEM18 Conference attendance award 2018*