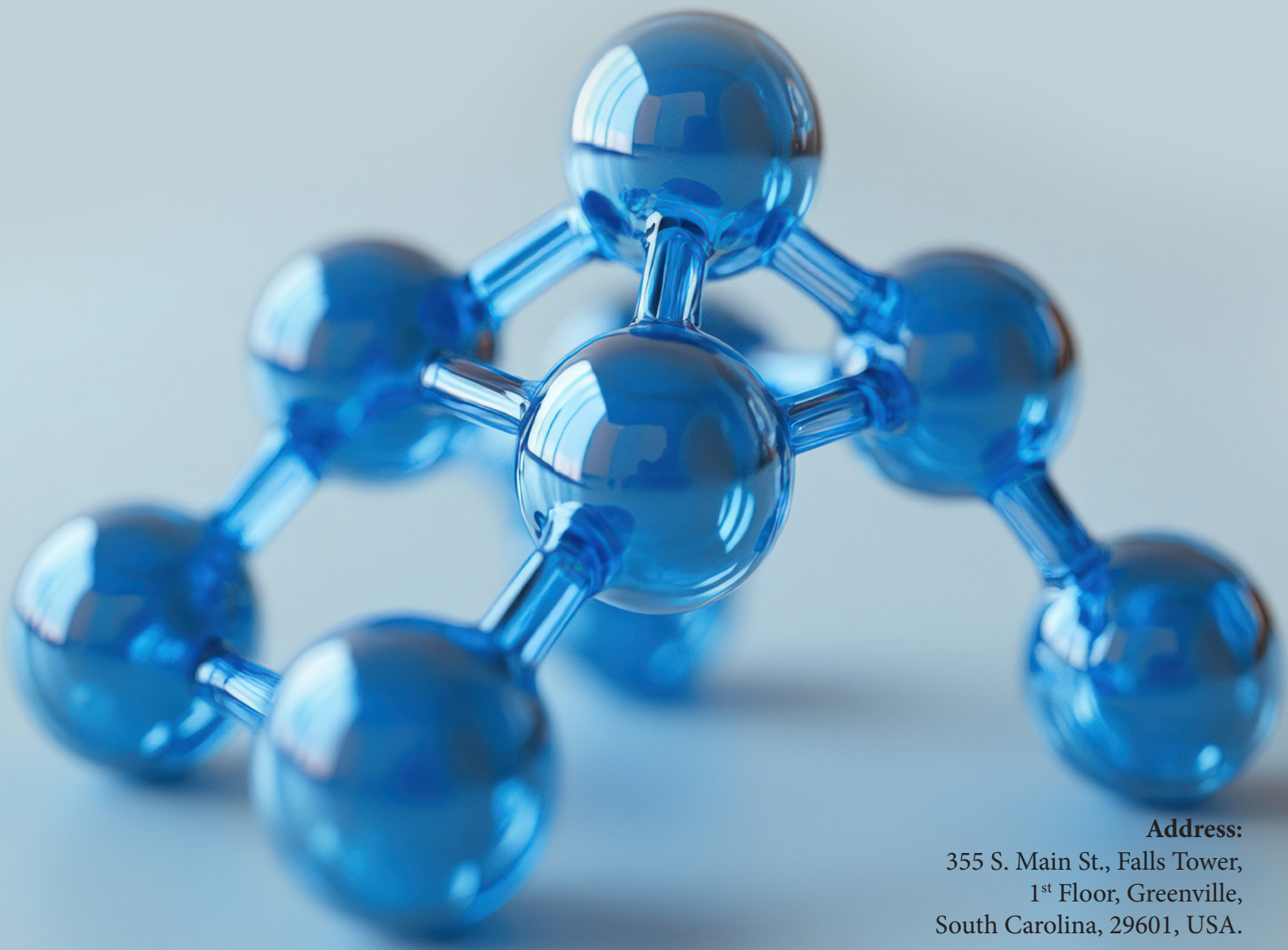
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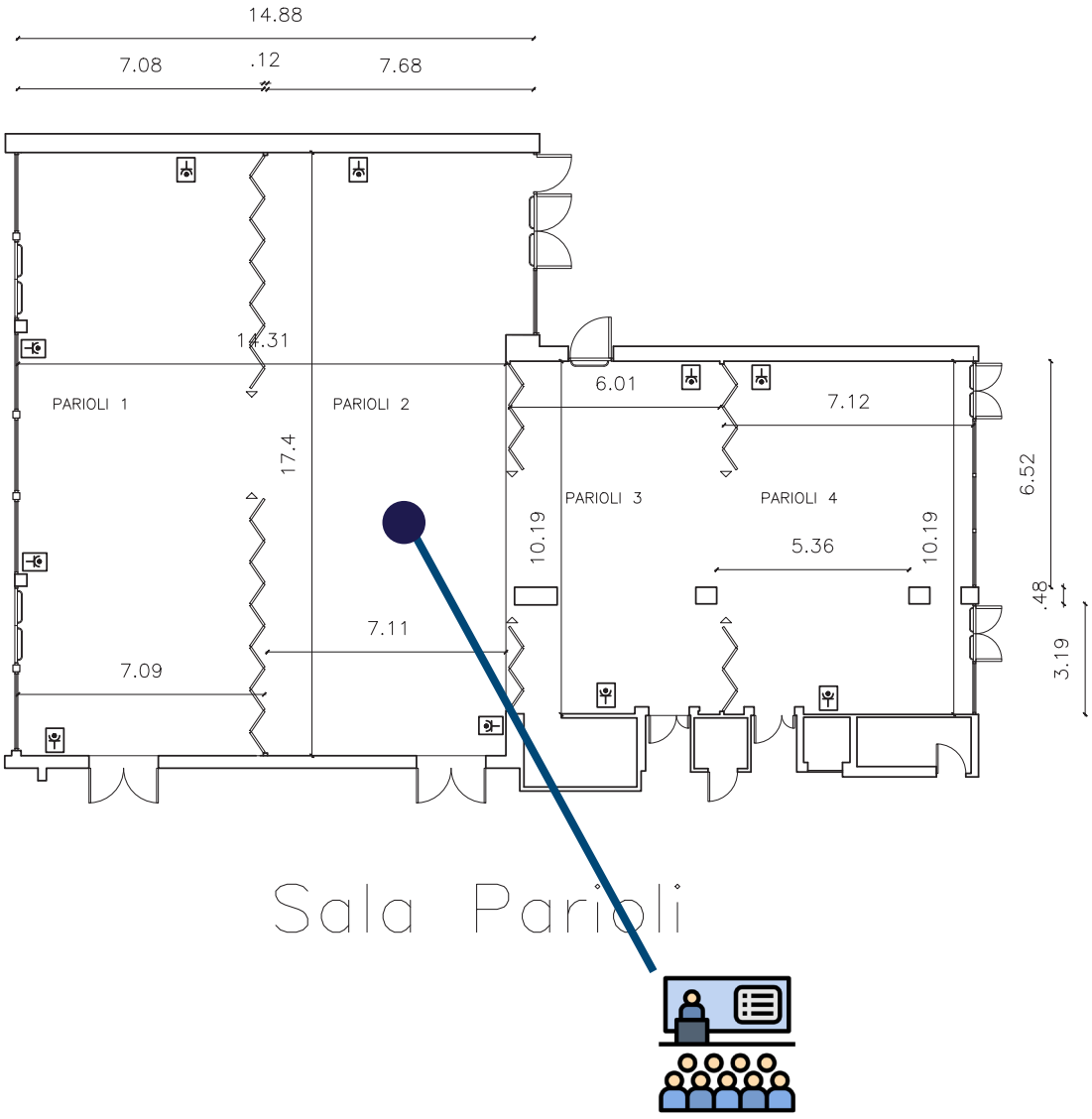
ADVANCED NANOMATERIALS AND NANOTECHNOLOGY

November 17-18, 2025 | **Rome, Italy**



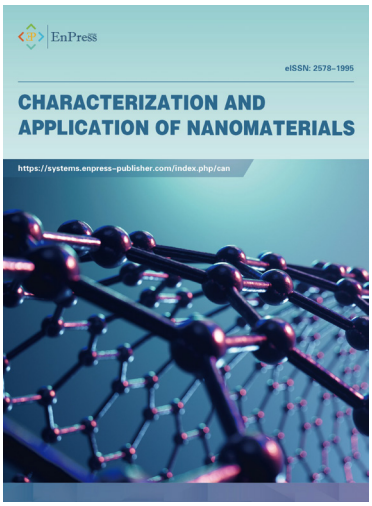
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355 S. Main St., Falls Tower,
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Floor Map



#ConferenceHall - Parioli 2

Journal Collaboration



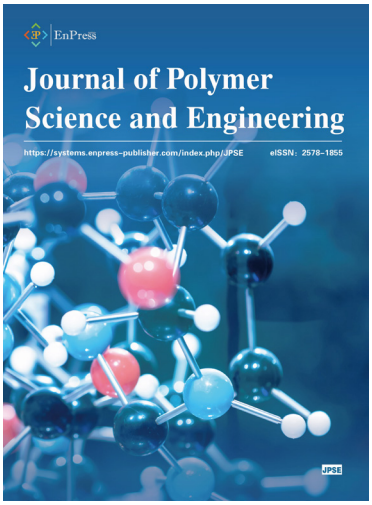
Characterization and Application of Nanomaterials

Characterization and Application of Nanomaterials (CAN, eISSN: 2578-1995) is an open-access peer-reviewed journal allowing maximum visibility of articles published in it as they are available to a wide, global audience. We are interested in the scientific topics from all fields of nano. CAN provides a forum to share scholarly practice to advance the use of nanomaterials in the context of scientific applications. Some examples of relevant topics are nanoparticle composites, nanoscale quantum physics, nanochemistry, nanomaterials, and energy applications. CAN publishes original research articles, review articles, editorials, case reports, brief commentaries, perspectives, etc.

Experimental and Theoretical Nanotechnology

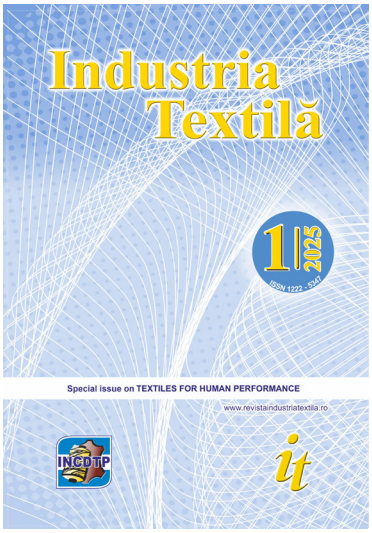
Experimental and Theoretical Nanotechnology (ETN) abbreviated as Exp. Theo. Nanotechnology is a multidisciplinary peer-reviewed and open access journal. It includes specialized research papers, short communications, reviews and selected conference papers in special issues on the characterization, synthesis, processing, structure and properties of different principles and applications of nanotechnology with focus on advantageous achievements and applications for the specialists in engineering, chemistry, physics, materials science and medicine. ETN covers and publishes all aspects of fundamental and applied researches of experimental and theoretical nanoscale technology dealing with materials synthesis, processing, nanofabrication, nanoprobes, spectroscopy, properties, biological systems, nanostructures, nanoelectronics, nano-optics, nano-mechanics, nanodevices, nanobiotechnology, nanomedicine, nanotoxicology within the scope of the journal. ETN aims to acquire the recent and outstanding researches for the benefit of the human being.

Journal Collaboration



Journal of Polymer Science and Engineering

Journal of Polymer Science and Engineering Journal of Polymer Science and Engineering (JPSE, eISSN: 2578-1855) is a peer-reviewed journal dedicated to the rapid publication of fundamental research papers in all areas concerning polymerization techniques and recent advances of plastic engineering. JPSE solicits research articles covering a broad spectrum of ideas and concepts in polymer science, polymer engineering, and polymer technologies including those on biomaterials, polymer blends, energy conversion and storage, biodegradable polymers and green materials and green technologies. Polymer science and engineering is a strongly interdisciplinary field and papers published by the journal may span areas such as polymer physics, polymer processing and engineering of polymer-based materials and their applications. The journal is also relevant to areas such as, implantable devices, drug delivery systems, bio-nanotechnology and tissue engineering.



Industria Textila journal

Industria Textila journalIndustria Textila journal is WOS/ISI Thomson Reuters indexed and is addressed to specialists in the textile sector - raw materials, spinning, weaving, knitting, chemical technology, clothing and related fields: laboratory apparatus and equipment for mechanical and chemical processing, chemicals and auxiliaries, computer aided design and computer aided manufacturing, management and marketing systems etc. Currently the journal is published in 6 issues / year, but the number and the quality of articles published - containing information about the textile field and the related fields - management, marketing, chemistry, leather – has increased from one year to another.

SCIENTIFIC PROGRAM DAY 1 - Nov 17, 2025

Meeting Hall: Parioli 2

09.00 - 09.45 **Registrations**

09.45 - 10.00 **Introduction**

Moderator

Yalén Del Río-Jay, Institute of Regenerative Medicine and Biotherapies, France

Keynote Presentations	
10.00 - 10.40	**Title:** Synthesis and Characterization of Bioactive Glass Material by Hydrothermal Assisted Sol Gel Method
Nermin Demirkol, Kocaeli University, Turkey	
10.40 - 11.20	**Title:** Designing for The Invisible: Lessons from EMI and VC in Nanolabs
Erik Renkens, Deerns, The Netherlands	
11.20 - 11.35	**Networking and Refreshments @ Bar**
11.35 - 12.15	**Title:** Dynamically Coupled Systems (DCSs): Vibration Absorbers and Energy Harvesters
Payam Soltani, Military Technological College, Oman	
Oral Presentations	
Session Chairs: **Nermin Demirkol,** Kocaeli University, Turkey **Bettina Camin,** Hochschule Bremerhaven, Germany	
Sessions: Nanocatalysis | Biomaterials | Materials Science and Engineering | Nanotechnology	
12.15 - 12.45	**Title:** Assessment of Novel Boron-doped Mesoporous Bioactive Glass Nanoparticles Loaded Alginate Hydrogel in Dogs
Marwa Samir Naga, Alexandria University, Egypt	
12.45 - 13.00	**Group Photo**
13.00 - 14.00	**Lunch @ Seguimi**
14.00 - 14.30	**Title:** Synthesis of Multi-Metallic Sub-Nanocatalysts using A Dendrimer Reactor
Kimihisa Yamamoto, Tokyo Institute of Technology, Japan	
14.30 - 15.00	**Title:** From 2D to 3D: Advantages of 3D µ-Tomography for Analyzing Kirkendall Porosity using Ni/CMSX-type Diffusion Couples
Bettina Camin, Hochschule Bremerhaven, Germany	

15.00 - 15.30	**Title:** Bioactivation of β-$Ti_{12}Mo_6Zr_2Fe$ Alloy via Dip-Coating with Sr-Modified Bioactive Glass
Joao Henrique Lopes, Technological Institute of Aeronautics, Brazil	
15.30 - 16.00	**Title:** *In vivo* Biodistribution, Immune Modulation and Regenerative Potential of mRNA-Loaded Lipid Nanoparticles in Zebrafish
Yalén Del Río-Jay, Institute of Regenerative Medicine and Biotherapies, France	
16.00 - 16.30	**Networking and Refreshments @ Bar**
Video Presentation	
VP-01	**Title:** Tool for Forming Regular Reliefs on Inner Cylindrical Surfaces Using the Method of Surface Plastic Deformation (SPD)
Aleksandr Valentinovich Markov, Technical University of Varna, Bulgaria	
E-Poster Presentation	
EP-01	**Title:** Design of Mesalazine-Loaded Chitosan–Alginate Nanoparticles for Potential Treatment of Inflammatory Bowel Diseases
Amanda Letícia Polli Silvestre, São Paulo State University, Brazil	

Day 1 Concludes Followed by Certificate Distribution

SCIENTIFIC PROGRAM #DAY 2 - Nov 18, 2025

Meeting Hall: Parioli 2

Moderator

Yalén Del Río-Jay, Institute of Regenerative Medicine and Biotherapies, France

Keynote Presentations	
10.00 - 10.40	**Title:** Analysis of Diffusion Processes and Microstructural Changes in A Material Pairing Consisting of Ni/Ni-Based Superalloy CMSX-4 Enabled by Diffusion Couple Technique
Bettina Camin, Hochschule Bremerhaven, Germany	
Oral Presentations	
Sessions: Materials Science and Engineering | Nanobiotechnology | Environmental Nanotechnology | Materials Science and Engineering | Energy Materials | Nanomedicine | Nano Engineering and Nano Applications | Nano Robotics | Advanced Materials	
10.40 - 11.10	**Title:** Comparative Analysis of the Cytotoxic and/or Antioxidant Activity of Green Synthesized CeO_2 Nanoparticles and CeO_2 Nanobiohybrids with Rosemary on Human Peripheral Blood Mononuclear Cells
Luisa María Rendón Barros, University of Cauca, Colombia	
11.10 - 11.25	**Networking and Refreshments @ Bar**
11.25 - 11.55	**Title:** Clean, Green, and Precise: Reimagining Facility Processes
Erik Renkens, Deerns, The Netherlands	
11.55 - 12.25	**Title:** Simulation by Multi Stages Uniaxial Hot Compression and Subsequent Double-fold Cooling
Maha El-Meligy, Central Metallurgical R&D Institute (CMRDI), Egypt	
Poster Presentations	
Poster Judge: **Nermin Demirkol,** Kocaeli University, Turkey	
P-01	**Title:** *In vitro* and *Ex vivo* Biocompatibility, Biomolecular Interactions, and Characterization of Graphene Quantum Dots and its Glutathione Modified Variant for Qualitative Cell Imaging
Marlin Pedrozo-Peñafiel, Pontifical Catholic University of Rio de Janeiro, Brazil	
P-02	**Title:** Bio-Mimetic Synthesis of Biologically Active Nano-Cobalt Oxide Anchored Zinc Oxide Nanorods
Omkar S Karvekar, Palacky University Olomouc, Czech Republic	

P-03	**Title:** Electrochemical Synthesis of Nanomagnetite Modified with Biocompatible Surfactants
Nino Makhaldiani, Georgian Technical University, Georgia	
P-04	**Title:** Mg-Doped In_2O_3/Carbon Composite Anodes with Enhanced Reversibility for Li-Ion Batteries
Gurdit Singh, National Institute of Technology Kurukshetra, India	
P-05	**Title:** Comparative Analysis of the Cytotoxic and/or Antioxidant Activity of Green Synthesized CeO_2 Nanoparticles and CeO_2 Nanobiohybrids with Rosemary on Human Peripheral Blood Mononuclear Cells
Valentina Collo Salazar and Luisa María Rendón Barros, University of Cauca, Colombia	
P-06	**Title:** Moiré Atomic Force Sensors for Robust Nanoscale Sensing
Nan Deng, Technische Universität Ilmenau, Germany	
P-07	**Title:** Different Hypervalent Iodine Compounds Synthesized in the Presence of Triethylene Glycol Monomethyl Ether and Polyvinylpyrrolidone
Seyedeh Mohadeseh Hosseini, Institute for Advanced Studies in Basic Sciences (IASBS), Iran	

Day 2 Concludes Followed by Certificate Distribution and Lunch @ 13.15

VIRTUAL PROGRAM #DAY 2 - Nov 18, 2025

British Summer Time (BST)	
Sessions: Materials Science and Engineering | Nanobiotechnology | Environmental Nanotechnology | Materials Science and Engineering | Energy Materials | Nanomedicine | Nano Engineering and Nano Applications | Nano Robotics | Advanced Materials	
Keynote Presentations	
10.00 - 10.30	**Title:** Multi-Scale Small Particle Dynamics in Blocked Pipe Interface Materials by Improving Resovled CFD Simulation Methods
K Sun, Wuhan University of Science and Technology, China	
10.30 - 11.00	**Title:** Incorporating Bioactive Glass Nanoparticles in Silk Fibroin/Bacterial Nanocellulose Composite Scaffolds Improves Their Biological and Osteogenic Properties for Bone Tissue Engineering Applications
Mohammadali Meskaraf-Asadabadi, Kermanshah University of Medical Sciences, Iran	
11.00 - 11.30	**Title:** Role of d electrons in Multifunctional Materials
Sujit Kumar Bandyopadhyay, Variable Energy Cyclotron Centre, India	
Oral Presentations	
11.30 - 11.50	**Title:** Characterization and Evaluation of Green Synthesized *Euphorbia hirta L.* Silver Nanoparticles Against Anti-Diabetic Activity and Protein Binding Study with Anti – Diabetic Drug
J Bagyalakshmi, Sri Ramakrishna Institute of Paramedical Sciences, India	
11.50 - 12.10	**Title:** Adsorption of Rhodamine B Dye from Solution Using 3-((1-(4-((1H-Benzo[d]imidazol-2-yl) Amino) Phenyl) Ethylidene) Amino) Phenol (BIAPEHB)/ P(AA-co-AM) Composite
Maryam Batool, University of Sahiwal, Pakistan	
12.10 - 12.30	**Title:** Eco-friendly Silver Nanoparticle Biosynthesis from *Stevia rebaudiana* and Elicitor-Driven Stevioside Glycoside Production in *Acremonium sclerotigenum* CBS 124.42 with Bioactivity Evaluation
Nishant, Birla Institute of Technology, India	
12.30 - 12.50	**Title:** Use of Nanotechnology and Artificial Intelligence to Improve Predictive Lung Cancer Detection in People Over 60 Years of Age: A Systematic Literature Mapping
Adrián H Tozzi, Universidad Abierta Interamericana, Argentina	
12.50 - 13.10	**Title:** Thermomechanical Processing of Metallic Materials: Simulation-Guided Pathways to Enhanced Microstructure and Performance
Eman Hassan El-Shenawy, Central Metallurgical R&D Institute, Egypt	

13.10 - 13.30	Eye Relaxation
13.30 - 13.50	**Title:** Biopolymer-Polymer Blend Electrolyte Membrane for High Energy Density Supercapacitor Applications
Achchhe Lal Saroj, Banaras Hindu University, India	
13.50 - 14.10	**Title:** Magnesium Oxide Nanoparticles-Enhanced Bacterial Cellulose/Silk Fibroin Scaffolds for Bone Regeneration
Elham Ghanbari, Kermanshah University of Medical Sciences, Iran	
14.10 - 14.30	**Title:** BDNF-Loaded Amino Acid–Catecholamine Hybrid Nanoparticles as Curative Agents against Cognitive Decline in Alzheimer's Disease
Himanshu Sekhar Panda, Institute of Nano Science and Technology, India	
14.30 - 14.50	**Title:** Molecular Adsorbates at Solid-Liquid Interfaces Monitored by Electrochemical Scanning Tunneling Microscopy
Marek Nowicki, University of Wroclaw, Poland	
14.50 - 15.10	**Title:** Bioinspired Cu-Aspartate Complex as A Dual-Enzyme Mimicking System for Environmental and Bio-Sensing Applications
Annu Dagar, National Forensic Sciences University, India	
15.10 - 15.30	**Title:** Controlling Nanochemistry Towards Emerging Nanophysics and Applications: Focus on Nano-Bioelectronics and Delivery of Light from The Excited State
A Guillermo Bracamonte, Universidad Nacional de Córdoba, Argentina	
15.30 - 15.50	**Title:** AI-Based Techniques for the Design, Fabrication and Evaluation of Nanorobots in Personalized Therapy
A V Vasanthi, Sarojini Naidu Vanita Pharmacy Maha Vidyalaya, India	
15.50 - 16.10	**Title:** Obstacles In the Recovery of Waste Heat in Steel Plants and Possible Remedies
Sudipta Sikdar, India	
16.10 - 16.30	**Title:** Recent Advances in Nanoformulations for Helminthiasis Treatment
João Paulo Figueiró Longo, Universidade de Brasília, Brazil	
Keynote Presentation	
16.30 - 17.00	**Title:** Prospective Investigation of Radiofrequency and Nanomaterials Synergism in Cancer Cells Viability
Paulo Cesar De Morais, Catholic University of Brasilia, Brazil	

Day 2 Concludes Followed by Vote of Thanks

Day - 1
Keynote

C2P FORUM
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2nd European Congress on
Advanced Nanomaterials and Nanotechnology
November 17-18, 2025 | Rome, Italy

SYNTHESIS AND CHARACTERIZATION OF BIOACTIVE GLASS MATERIAL BY HYDROTHERMAL ASSISTED SOL GEL METHOD

Nermin Demirkol[1], Derya Kirsever[2], Gökhan Duruksu[1] and Yusufhan Yazir[1]
[1]*Kocaeli University, Turkey*
[2]*Sakarya University, Turkey*

Abstract

In this study, a hydrothermal-assisted sol–gel method was employed to synthesize bioactive glass with the nominal molar composition of $60SiO_2$-$36CaO$-$4P_2O_5$ (mol%). The hydrothermal system played a crucial role in accelerating the sol-to-gel transition, thereby significantly reducing the overall processing time compared to conventional sol-gel methods. This approach offers a more efficient route for the production of bioactive glass, which is known for its excellent bioactivity and biocompatibility, particularly in bone tissue engineering applications.

Following the synthesis, the obtained gel-derived bioactive glass powders were subjected to calcination to remove organic residues and improve the structural stability. The calcined powders were then extensively characterized using various analytical techniques. X-ray diffraction (XRD) was performed to investigate the crystallographic structure of the glass, and the results confirmed the amorphous nature of the material. Thermal behavior and phase transformations were studied by differential thermal analysis (DTA) and thermogravimetric analysis (TGA), which provided insights into the thermal stability and decomposition patterns of the synthesized powders. Fourier-transform infrared spectroscopy (FTIR) was utilized to identify the functional groups and confirm the formation of silicate networks typical of bioactive glasses. Furthermore, scanning electron microscopy (SEM) was employed to examine the morphology and particle size distribution of the glass powders, revealing a homogenous structure with nanoscale features. To evaluate the in vitro bioactivity, the synthesized bioactive glass powders were immersed in simulated body fluid (SBF) under physiological conditions. The formation of a hydroxyapatite-like layer on the surface of the glass particles after immersion confirmed their bioactivity and potential for bone-bonding applications. Overall, the study demonstrates that the hydrothermal-assisted sol–gel method is an effective and time-efficient technique for the synthesis of amorphous bioactive glass with promising physicochemical and biological properties. This method can serve as a valuable alternative to conventional synthesis routes for the development of next-generation bioactive materials in biomedical applications.

Biography

Nermin Demirkol received her B.Sc. degree from Dumlupınar University as a ceramic engineer, Türkiye in 2001, and M.Sc. degree from Gebze Institute of Technology, Türkiye in 2004 and PhD degree from the İstanbul Technical University (ITU), Türkiye in 2013. Since 2004, Demirkol has presented and published papers on the production and characterization of ceramic materials in many countries including Belgium, Germany, USA, Japan, Spain, France, England, Sweden, Romania, China, Greece, Hungary. She has many publications in SCI. In 2011, she received a scientific achievement award from Kocaeli University for her SCI publications. In 2014, her biography was published among the World Successful Scientists by the Marquis Who' s Who Publication Board in the UK. In 2015, she was listed among the TOP 100 Engineers by the biography center in the UK. She is a board member of Biomaterials and Tissue Engineering Society (BTES) and Clay Sciences Society, member of Turkish Ceramic Society, European Ceramic Society ECerS, Turkish Electron Microscopy Society, International Society for Ceramics in Medicine ISCM and European Society for Biomaterials (ESB). She served as chair, organizing board and scientific board member in many international symposiums and congresses. She continues her studies on the production and characterization of traditional ceramics, bioceramic composites, 3D printing technology, reuse of waste materials in ceramic material production and ceramic glazes. She is involved in many national and international projects as an executive and researcher. She is an Associate Professor at Kocaeli University, Faculty of Fine Arts, Department of Ceramics.



Nermin Demirkol
Kocaeli University, Turkey