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Research Interests

1) Pharmaceutical Biomaterials
2) Nanoparticles synthesis and applications in drug delivery
3) Tissue engineering and regenerative medicine
4) Antimicrobial and antibiofilm activity of medicinal plants and nanostructures
5) Dental biomaterials and implants

Education

Ph.D : Pharmaceutical Biomaterials, Tehran University of Medical Sciences
Thesis title: Preparation and investigation of the effect of nanoparticles loaded with kartogenin in order to regenerate cartilage tissue.
Supervisor: Prof. Hamid Akbari Javar, , Dr. Shahin Bonakdar, Prof. Mohammad Ali Shokrgozar

M.Sc. : Inorganic Chemistry, Ilam University, Ilam, Iran
Thesis title : Preparation and characterization of silver nanoparticles using $[Fe_2(EDTA)]^{2-}$ complex as the reducing agent
Supervisor: Prof. Saeed Farhadi, Prof. Ali Naghipoor

B.Sc. : Applied Chemistry, Lorestan University, Khorramabad, Iran

Academic Experiences

- Head of Dental Biomaterials Group | Faculty of Dentistry, Lorestan University, Iran | 2025–Present
  Leading research on dental biomaterials, nanocomposites, and biocompatible polymers; supervising students and research projects.

- Faculty Member | Razi Herbal Medicines Research Center, Lorestan, Iran | 2023–Present
  Conducted research on medicinal plant extracts, antimicrobial properties, and bioactive compounds; participated in collaborative projects and publications.

- Research Assistant | Tehran University of Medical Sciences, Pharmaceutical Biomaterials Department, Tehran, Iran | 2018–2022
  Worked on polymer synthesis, nanoparticle production, and experimental design; contributed to publications and lab management.

- Research Assistant | Pasteur Institute of Iran, Department of Cell Bank, Tehran, Iran | 2018–2020
  Assisted in cell culture, mesenchymal stem cell isolation, and molecular biology experiments; maintained cell bank and documentation.

- Research Assistant | Lorestan University, Faculty of Science, Department of Chemistry, Lorestan, Iran | 2011–2012
  Conducted chemical synthesis experiments and lab analyses; supported faculty

Academic Projects

1. Determination of topical effects of silymarin and metformin on diabetic ulcers, Pharmaceutical Biomaterials Department, Tehran University of Medical science, Tehran, Iran

2. Preparation and evaluation of injectable hydrogel PLGA - PEG - PLGA / KFE loaded with kartogenin for repair and regeneration of cartilage tissue, Pharmaceutical Biomaterials Department, Tehran University of Medical science, Tehran, Iran

3. Wound dressing based on sodium carboxymethyl cellulose/carboxymethyl chitosan/agarose containing silk fibroin for antibiotic delivery, National Cell Bank Department, Pasteur Institute of Iran, Tehran, Iran

4. Ultrasound-Assisted Preparation of SPION@Chitosan Functionalized Ionic Liquid as a Novel and Reusable Superparamagnetic Catalyst for Green One-Pot Synthesis of pyrido[2,3‑d]pyrimi‑dione Derivatives under Ultrasonic Irradiation in Water, Endocrinology and

Metabolism Research Center, Endocrinology and Metabolism Clinical Sciences Institute, Tehran University of Medical Sciences, Tehran, Iran.

5. Determining the antimicrobial effect of formononetin (an isoflavone derived from plants) on the pathogens Candida albicans and Enterococcus faecalis in a laboratory environment, Faculty of Dentistry, Lorestan University of Medical Science.

6. Making toothpaste formulation based on prussian blue nanoparticles and N-acetyl cysteine (NAC), Faculty of Dentistry, Lorestan University of Medical Science.

7. Evaloution of the antimicrobial effect of the Green Synthesis of Copper Oxide Nanoparticles Using Cotoneaster against biofilm-producing Enterococcus faecalis in vitro, Faculty of Dentistry, Lorestan University of Medical Science.

8. Evaloution of antimicrobial effect of the Green Synthesis of Aqueous Extract of Zinc Oxid Nanoparticles Using Paliurus spinosa against biofilm producer The Enterococcus Faecalis in vitro, Faculty of Dentistry, Lorestan University of Medical Science.

9. Investigating the effect of group B vitamins (B1, B6, B12) and Krocina on pain intensity, functional status and severity of clinical symptoms of carpal tunnel syndrome patients, Faculty of Pharmacy, Lorestan University of Medical Science.

10. Fabrication of magnesium oxide nanoparticles based on guar gum and investigation of antimicrobial properties against bacteria causing dental infection, Faculty of Dentistry, Lorestan University of Medical Science.

11. The effect of ethanolic extract of Cichorium intybus and zinc oxide nanoparticles synthesized by ethanolic extract of Cichorium intybus on gene expression of the toxin-antitoxin system of Pseudomonas aeruginosa, Razi Herbal Medicine Research Center, Lorestan University of Medical Science.

12. Production of selenium sulfide nanostructures coated with glycerolic extract of Lawsonia inermis for the control of acne and dermatophytes in vitro, Razi Herbal Medicine Research Center, Lorestan University of Medical Science.

13. Multifunctional bioactivity of Zinc selenide nanoparticles coated with seaweed polysaccharide from Ulva fasciata, Razi Herbal Medicine Research Center, Lorestan University of Medical Science.

14. A systematic review on the role of organic and inorganic nanoparticles made by green synthesis method against bacteria causing tooth decay, Faculty of Dentistry, Lorestan University of Medical Science.

15. A systematic review on the role of Iranian medicinal plants against Candida albicans as the main cause of oral candidiasis, Faculty of Dentistry, Lorestan University of Medical Science.

16. Investigating the antimicrobial effect of hydroalcoholic extract of Pinus longifalia and Pinus eldarica fruits on Candida albicans and Enterococcus faecalis pathogens in vitro, Faculty of Dentistry, Lorestan University of Medical Science.

17. A systematic review on the effect of nanoparticles synthesized by the green method in the treatment of periodontitis, Faculty of Dentistry, Lorestan University of Medical Science.

18. Evaluation of antimicrobial effect of chitosan-based nanogel system containing chlorhexidine on periopathogen Aggregatibacter Actinomycetemcomitans, Faculty of Dentistry, Lorestan University of Medical Science.

19. Investigation of mechanical properties of new dental implants manufactured using laser and clean SLA methods. Faculty of Dentistry, Lorestan University of Medical Science.

20. Investigation of the cytotoxicity of a new dental implants manufactured using laser and clean SLA methods. Faculty of Dentistry, Lorestan University of Medical Science.

21. Investigation the effect of 20% carbamide peroxide bleaching on the colorability of monolithic ceramics after coffee thermocycling . Faculty of Dentistry, Lorestan University of Medical Science.

22. The Effect of Native Iranian Medicinal Plants on Abortion in Mice; A Systematic Review

23. Impact of Biologically Synthesized Ag-NPs by Ethanolic Extract of *Muscari neglectum* on *esp* Gene Expression in Biofilm-Forming *Enterococcus faecalis*

24. The effect of methanolic extract of Cichorium intybus and zinc oxide nanoparticles synthesized by methanolic extract of Cichorium intybus on gene expression of the toxin-antitoxin system of Pseudomonas aeruginosa

25. Antimicrobial and Super-Absorbent Sanitary Pad for Women: A New Generation in Preventing Diseases and Infections

26. Herbal mouthwash containing elecampane and cloves with antibacterial and anti-inflammatory properties

27. Investigating the protective effect of zinc nanoparticles loaded in chitosan-camphor nanocomposite on thioacetamide-induced liver damage and subsequent encephalopathy in rats

28. Investigation of the antibiabetic effect of zinc nanoparticles loaded in chitosan-camphor nanocomposite in streptozotocin-induced diabetic rats

Published articles

1. Sol–gel derived $LaFeO_3/SiO_2$ nanocomposite: synthesis, characterization and its application as a new, green and recoverable heterogeneous catalyst; Journal of the Iranian Chemical Society, 2013. DOI: 10.1007/s13738-013-0377-3
2. Spinel-Type Cobalt Oxide (Co_3O_4) Nanoparticles from the mer $Co(NH_3)_3$ $(NO_2)_3$ Complex; Journal of Nanostructures, 2013. DOI: 10.7508/JNS.2013.02.008
3. Functionalized Carbon/Alumina/Silica Nano-fibrous Membrane: preparation, characterization and heavy metal filtration performance; Desalination and Water Treatment, 2021. DOI: 10.5004/dwt.2021.27520
4. Cartilage Tissue Regeneration Using Kartogenin Loaded Hybrid Scaffold for the Chondrogenic of Adipose Mesenchymal Stem Cells; Journal of Drug Delivery Science and Technology, 2022. DOI:10.1016/j.jddst.2022.103384
5. Comparison of engineered cartilage based on BMSCs and chondrocytes seeded on PVA-PPU scaffold in a sheep model; J Biomed Mater Res B Appl Biomater, 2022. DOI: 10.1002/jbm.b.35087
6. Ionic Liquid Modified SPION@Chitosan as a Novel and Reusable Superparamagnetic Catalyst; Catalysts, 2023. DOI: 10.3390/catalysts13020290
7. Antibacterial, antifungal, antibiofilm, and cytotoxicity activity of Astragalus baba-alliar extract against main causes of dental root canal infections; Archives of Razi Institute, 2024. DOI: 10.22092/ari.2024.365789.3139
8. Metformin and silymarin loaded onto poly(caprolactone)/chitosan polymeric nanofiber based pads for diabetic wound healing; New Journal of Chemistry, 2024. DOI: 10.1039/d3nj05628g
9. The Effect of Green-Synthesized Nanoparticles on Dental Caries-Causing Bacteria: A Systematic Review; Recent Patents on Biotechnology, 2025.
10. Metformin as a Potential Therapeutic Agent in Breast Cancer: Targeting miR-125a Methylation and Epigenetic Regulation; International Journal of Molecular and Cellular Medicine, 2024.
11. The Potential of Iranian Medicinal Plants in Combating Candida Albicans, A Major Cause of Oral Candidiasis: A Systematic Review, 2025. DOI: 10.2174/0122127968379046250903225716
12. Anti-oral squamous cell carcinoma, DNA damage, and apoptotic induction of Nectaroscordum tripedale essential oil, 2025.

TEACHING EXPERIENCES

1. Tissue Engineering and Regeneration in Dentistry
2. Dental Materials
3. Applied Dental Materials
4. New science in dentistry
5. General Chemistry
6. Research method
7. Pharmaceutics
8. Inorganic Chemistry Laboratory
9. General Chemistry Laboratory
10. Physical pharmacy

ATTENDED SEMINARS & CONFERENCES

1. 4th International Congress on Nanoscience and Nanotechnology, Kashan University.
2. 1th National Conference and Workshops on Nanoscience and Nanotechnology, Tarbiat Modarres University.
3. 13th Conference on Nanotechnology graduates, Tehran University of Medical Sciences.
4. 16th Iranian Pharmaceutical Sciences Congress, Kermanshah University of Medical Sciences, School of Pharmacy.
5. Being at the second place in the 21th Iranian Pharmacy student's seminar (IPSS 21) 6-9-. as a poster. Ahvaz-Iran December 2021.
6. Training of formulation pharmaceutical (Semi- solid drug), Institute Science, Technology & Engineering "September"2022.
7. Workshop on "Atomic Force Microscopy" Institute: 2th Iranian Nanomedicine Congress (INMC2016) IranZanjan September 2024.
8. Safety workshop in the laboratory Institute: Chamran martyr of Ahwaz University, December2011. Training course on the subject of Introduction to DIN EN17025 Institute: medical University Iran zanjan November 2009.

Workshops

- Introduction to Entrepreneurship
- Teamwork skills and successful leadership
- Chiral Separation of Drugs by HPLC
- Safety in laboratories, Tissue Engineering
- Construction of tissue engineered heart and its evaluation
- Working with laboratory animals
- Laboratory Animal Science in Regenerative Medicine and Stem Cells Researches
- Workshop of Charactrization of protein corona composition on the surface of nanoparticles

Laboratory Skills

- **Cell and Molecular Biology:**
  Cell culture, Evaluation of cytotoxicity, Immunocytochemistry, qPCR, PCR, Isolation and culture of mesenchymal stem cells

- **Nanotechnology & Biomaterials:**

  Biocompatible and biodegradable polymers and copolymer synthesis, Design and surface engineering, Production of nanocomposites, Nanoparticle synthesis (iron oxide magnetic, polymer micelles, bioceramics, metal nanoparticles, lipid nanoparticles), Nanofiber and hydrogel scaffold synthesis, Conducted chemical experiments, tests and analysis using techniques such as Atomic Absorption Spectrophotometer, UV-vis spectroscopy, HPLC and FT-IR photometer, NMR, Particle Size and Zeta Potential analyzer with Dynamic Light Dispersion (DLS), Fluorescence spectroscopy

- **Immunology & Biochemistry:**
  ELISA test

- **Microbiology:**
  Isolation and identification of pathogenic bacteria, Antimicrobial susceptibility testing, Biofilm formation and inhibition assays, DNA/RNA extraction, Molecular identification (16S rRNA), Plant extract antibacterial activity

Computer Skills

- **Statistical and Data Analysis:** SPSS, Experimental design software
- **Office & Documentation:** Microsoft Office (Word, Excel, PowerPoint)
- **Bioinformatics & Molecular Tools:** SnapGene, F-Text, GeneRunner
- **Graphic Design & Visualization:** Adobe Photoshop, BioRender, Canva

Languages

1. English (Fluent)
2. Persian (Native)