
S. Zohreh Mirahmadi-Zare



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RESEARCH INTERESTS & AREAS

Bio-electro sensor, Modified magnetic nanoparticles, Bio-nanocomposite including

- Electrochemical bio-sensor fabrication
- Functionalized Magnetic nanoparticles in core-shell design for target imaging, separation, hyperthermia, cryoprotectant, drug delivery and other therapeutic application.
- Multi-modal drug delivery system including gene, drug, protein, dye and etc.
- Surface modification process for biological application

EDUCATION

Ph.D., Analytical chemistry, Isfahan University of Technology 2011

Advisor: Prof. Behzad Rezaei and Prof. Aliasghar Ensafi

Dissertation: *Application of Nanoparticles, Molecularly Imprinted Polymer and Solgel as Modifier for Fabrication of Selective and Sensitive Sensor to Determination of some Antibiotics and Corticosteroids*

M.S., Analytical chemistry, Isfahan University of Technology 2008

Advisors: Prof. Behzad Rezaei

Thesis: *Voltametric Determination of Noscapine and Leucine on Modified Glassy Carbon Electrode by Multiwalled Carbon nanotube*

B.S., Chemistry, Isfahan University of Technology 2006

EMPLOYMENT

Assistant Professor of analytical Chemistry, Department of Molecular Biotechnology, Royan Institute for Biotechnology, ACECR, Isfahan, Iran 2013–Present

Post-Doc researcher, Department of Molecular Biotechnology, Royan Institute for Biotechnology, ACECR, Isfahan, Iran 2011-2013

AWARDS & HONORS

- Dr. Chamran Award, 2011, Post-Doc course 2013
- National Elite Foundation Award, 2011, Honor graduate students in Ph.D 2011
- Honor Roll among the Ph.D. Students 2011
- National Elite Foundation Award, Honor graduate students in M.Sc 2008
- First Honor Roll among the M. Sc Students. 2008
- First Honor Roll among the B. Sc Students. 2006
- Honor Roll (First Student) in Department of Chemistry at IUT For six years. 2001-2007

TEACHING EXPERIENCES

- Analytical chemistry (B.Sc Course)
- Electrochemical analysis (B.Sc Course)
- Instrumental analysis (B.Sc Course)
- Advance analytical chemistry (M.Sc Course)
- Advance electrochemical analysis (M.Sc Course)
- Nano-biotechnology (M.Sc Course)
- Nanostructures Synthesis (M.Sc Course)
- Nano instrumental analysis (M.Sc Course)
- Introduction to Biochemistry (M.Sc Course)

MENTORSHIP

Master and PhD students

- Razieh Ghasemi, PhD student of Nano-biotechnology 2011-2017 (Expected)
- Roya Binamolagh, PhD student of Inorganic chemistry 2012-2017 (Expected)
- Farid Hajareh Haghghi, PhD student of Inorganic chemistry 2012-2018 (Expected)
- Elham Shoghi, post-Doc Researcher 2016-2018 (Expected)
- Maryam Farmani, MS Student of Material, 2017
- Najmeh Jeihani, MS Student of Material, 2017
- Marjan Motei, post-Doc Researcher, 2018
- Farshad Eslami, MS Student of Bio-medical engineering, 2018
- Keshtiara, PhD student of Inorganic chemistry, 2018

GRANTS

Title: Synthesis of hybrid gold quantum dots/magnetic nanoparticles functionalized by MUC1 aptamer

for MCF-7 cancer cell imaging, collecting and drug delivery

Role: Principle Investigator

Source: Iran National Science Foundation, (No. 94802693)

Price: 250,000,000 Rials

Data: 2017-2018

Title: Design of optical and electrochemical nanobiosensor using magnetic-gold nanoparticle-quantum dot for detection of *Streptococcus agalactiae*

Role: Second supervisor

Source: National Institute for Medical Research Development, (No. 940990)

Price: 400,000,000 Rials

Data: 2016-2018

Title: Dr. Kazemi Ashtiani research grant

Role: Top faculty member

Source: National Elite Foundation,

Price: 250,000,000 Rials

Data: 2014

PUBLICATIONS

Journal Articles

1. Mirahmadi-Zare, S. Z., Allafchian, A.R., & Jalali, S.A.H. "Core-shell fabrication of an extra-antimicrobial magnetic agent with synergistic effect of substrate ligand to increase the antimicrobial activity of Ag nanoclusters." *Environmental Progress & Sustainable Energy* (2018).
2. Hajareh Haghghi, F., Hadadzadeh, H., Farrokhpour, H., Amirghofran, Z., & Mirahmadi-Zare, S. Z. "Stabilization of DOPA Zwitterions on Laser-Generated Gold Nanoparticles: ONIOM Computational Study of the Charge-Dependent Structural and Electronic Changes of DOPA Adsorbed on the Gold Nanosurface." *The Journal of Physical Chemistry C* 122.15 (2018): 8680-8692.
3. Shoghi, E., Mirahmadi-Zare, S. Z., Ghasemi, R., Asghari, M., Poorebrahim, M., & Nasr-Esfahani, M. H. "Nanosized aptameric cavities imprinted on the surface of magnetic nanoparticles for high-throughput protein recognition." *Microchimica Acta* 185.4 (2018): 241.
4. Mirahmadi-Zare, S. Z., Aboutalebi, F., Allafchian, M., Pirjamali, L., & Nasr-Esfahani, M. H. "Layer

by layer coating of NH₂-silicate/polycarboxylic acid polymer saturated by Ni²⁺ onto the super magnetic NiFe₂O₄ nanoparticles for sensitive and bio-valuable separation of His-tagged proteins." *Protein expression and purification* 143 (2018): 71-76.

5. Binaymotlagh, R., Farrokhpour, H., Hadadzadeh, H., Mirahmadi-Zare, S. Z., & Amirghofran, Z. "Combined Experimental and Computational Study of the In Situ Adsorption of Piroxicam Anions on the Laser-Generated Gold Nanoparticles." *The Journal of Physical Chemistry C* 121.15 (2017): 8589-8600.
6. Allafchian, A., Mirahmadi-Zare, S. Z., & Gholamian, M. (2017). Determination of Trace Lead Detection in a Sample Solution by Liquid Three-Phase Microextraction–Anodic Stripping Voltammetry. *IEEE Sensors Journal*, 17(9), 2856-2862.
7. Binaymotlagh, R., Hadadzadeh, H., Farrokhpour, H., Haghghi, F. H., Abyar, F., & Mirahmadi-Zare, S. Z. "In situ generation of the gold nanoparticles–bovine serum albumin (AuNPs–BSA) bioconjugated system using pulsed-laser ablation (PLA)." *Materials Chemistry and Physics* 177 (2016): 360-370.
8. Mirahmadi-Zare, S. Z., Allafchian, A., Aboutalebi, F., Shojaei, P., Khazaie, Y., Dormiani, K., & Nasr-Esfahani, M. H. "Super magnetic nanoparticles NiFe₂O₄, coated with aluminum–nickel oxide sol-gel lattices to safe, sensitive and selective purification of his-tagged proteins." *Protein expression and purification* 121 (2016): 52-60.
9. Allafchian, A. R., Mirahmadi-Zare, S. Z., Jalali, S. A. H., Hashemi, S. S., & Vahabi, M. R. "Green synthesis of silver nanoparticles using phlomis leaf extract and investigation of their antibacterial activity." *Journal of Nanostructure in Chemistry* 6.2 (2016): 129-135.
10. Allafchian, A. R., Mirahmadi-Zare, S. Z., & Zahraei, S. A. (2016). Highly Selective Coated–wire Potentiometric Sensor for Determination of Oxycodone in Plasma and Urine. *Analytical & Bioanalytical Electrochemistry*, 8(4), 442-452.
11. Khazaie, Y., Dorkoosh, F. A., Novo, L., van Gaal, E., Fassihi, A., Mirahmadi-Zareh, S. Z., & Hennink, W. E. "Poly [N-(2-aminoethyl) ethyleneimine] as a New Non-Viral Gene Delivery Carrier: The Effect of Two Protonatable Nitrogens in the Monomer Unit on Gene Delivery Efficiency." *Journal of Pharmacy & Pharmaceutical Sciences* 17.4 (2014): 461-474.
12. Rezaei, Behzad, and S. Z. Mirahmadi-Zare. "Nanoscale Manipulation of Prednisolone as Electroactive Configuration Using Molecularly Imprinted-Multiwalled Carbon Nanotube Paste Electrode." *Electroanalysis* 23.11 (2011): 2724-2734.

13. Ensafi, A.A., Allafchian, A.R., Saraji, M., & Mirahmadi-Zareh, S. Z. "Liquid three-phase microextraction based on hollow fiber for highly selective and sensitive determination of desipramine using an ion selective electrode." *Analytical Methods* 3.2 (2011): 463-470.
14. Rezaei, B., Mirahmadi-Zareh, S. Z., & Ensafi, A.A., "Square wave voltammetric determination of Dexamethasone on a multiwalled carbon nanotube modified pencil electrode." *Journal of the Brazilian Chemical Society* 22.5 (2011): 897-904.
15. Ensafi, A. A., Rezaei, B., Mirahmadi-Zare, Z., & Karimi-Maleh, H. "Highly selective and sensitive voltammetric sensor for captopril determination based on modified multiwall carbon nanotubes paste electrode." *Journal of the Brazilian Chemical Society* 22.7 (2011): 1315-1322.
16. Saraji, M., Farajmand, B., Ensafi, A.A., Allafchian, A.R., & Mirahmadi-Zare, Z."Combined hollow fiber-based liquid–liquid–liquid microextraction and in-situ differential pulse voltammetry to improve selectivity, sensitivity, and interference elimination in electrochemical analysis." *Talanta* 82.4 (2010): 1588-1593.
17. Ensafi, A. A., Rezaei, B., Mirahmadi-Zare, Z., & Taei, M. "Simultaneous determination of ascorbic acid, epinephrine, and uric acid by differential pulse voltammetry using poly (3, 3'-bis [N, N-bis (carboxymethyl) aminomethyl]-o-cresolsulfonephthalein) modified glassy carbon electrode." *Sensors and Actuators B: Chemical* 150.1 (2010): 321-329.
18. Rezaei, B., and Z. Mirahmadi-Zare. "Modified glassy carbon electrode with multiwall carbon nanotubes as a voltammetric sensor for determination of leucine in biological and pharmaceutical samples." *Analytical Letters* 41.12 (2008): 2267-2286.
19. Rezaei, Behzad, and S. Zohreh Mirahmadi Zare. "Modified glassy carbon electrode with multiwall carbon nanotubes as a voltammetric sensor for determination of nescapine in biological and pharmaceutical samples." *Sensors and Actuators B: Chemical* 134.1 (2008): 292-299.