Dr. Asma Verdian

Assistant Professor and Head of Education and Graduate Affairs
Department of Food Safety and quality control,
Research Institute of Food Science & Technology, Mashhad, Iran
www.rifst.ir
Tel (work): +98 (51) 35425337
Fax: +98 (51) 35003150
E-mail address: asma_verdian@yahoo.com & a.verdian@rifst.ac.ir

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Education

- Ph.D. 2015, Physical Chemistry, Department of chemistry, Faculty of Sciences, Ferdowsi University of Mashhad, Iran (FUM).
- MSc. 2010, Physical Chemistry, Faculty of chemistry, Mazandran University, Babolsar, Iran.
- BSc. 2007, Pure Chemistry, Department of chemistry, Faculty of Sciences, Ferdowsi University of Mashhad, Iran (FUM).

Research Interests

- Aptamers and its application in the design of biosensors
- Biosensors and Nano-biosensors in food safety and processing
- Biophysical chemistry properties of biomolecules
- Liquid crystal sensors

Publications

1. A Cationic Surfactant-Decorated Liquid Crystal-Based Sensor for Sensitive Detection of Quinoline Yellow, *Scientific Reports*, 2021, accepted. Impact factor: **5.13**

2. A Novel Dual-Response Aptasensor for Ultra-Sensitive Monitoring of Food Toxin: A Combination of Polarized and Fluorescence Microscopy Imaging, *Food Control*, 2021, Revise. Impact factor: **5.55**

3. Development of a novel liquid crystal Apta-sensing platform using P-shape molecular switch, Asma Verdian, Zahra Khoshbin, Chih-Hsin Chen, *Biosensors and Bioelectronics*, 2021, accepted. Impact factor: **10.62**

4. Liquid Crystal-based Biosensors as Lab-On-Chip Tools: Promising for Future On-Site Detection Test Kits, Z Khoshbin, K Abnous, SM Taghdisi, A Verdian, *TrAC Trends in Analytical Chemistry*, 2021, 116325. Impact factor: **12.3**

5. A Novel Liquid Crystal-based Aptasensor for Ultra-Low Detection of Ochratoxin A using a π-Shaped DNA Structure: Promising for Future On-Site Detection Test Strips, Z Khoshbin, K Abnous, SM Taghdisi, A Verdian, *Biosensors and Bioelectronics*, 2021, 191, 113457. Impact factor: **10.62**

6. Equipment-free and visual detection of Pb^{2+} ion based on curcumin modified bacterial cellulose nanofiber, Elham Sheikhzadeh , Sara Naji-Tabasi , Simin Kolahi-Ahari , Asma Verdian, *Journal of the Iranian Chemical Society,* 2021, 1-8. Impact factor: **2.02**

7. An ultrasensitive platform for PCB77 detection: New strategy for liquid crystal-based aptasensor fabrication, A Verdian, Z Rouhbakhsh, E Fooladi, *Journal of Hazardous Materials*, 2021, 402, 123531. Impact factor: **10.59**

8. Study of quality characteristics, microbial contamination, heavy metals and toxins in different types of internal and imported rice, S Naji-Tabasi, A Verdian, H Zamani, L Asghari, S Shirazi, *Journal of Food Hygiene*, **2021**, 10 (39).

9. Novel Colorimetric Indicator Based on Cellulose Nanofiber to Monitor the Meat Spoilage, A Verdian, E Sheikhzadeh, *journal of innovation in food science and technology*, 2021, accepted.

10. Recent advances in computational methods for biosensor design, Z Khoshbin, MR Housaindokht, M Izadyar, MR Bozorgmehr, A Verdian, *Biotechnology and Bioengineering*, 2020, accepted. Impact factor: **4.53**

11. The investigation of the G-quadruplex aptamer selectivity to Pb^{2+} ion: a joint molecular dynamics simulation and density functional theory study, Z Khoshbin, MR Housaindokht, M Izadyar, MR Bozorgmehr, A Verdian, *Journal of Biomolecular Structure and Dynamics*, 2020, 3659-3675. Impact factor: **3.39**

12. Aptasensors as promising new tools in Bisphenol A detection-An invisible pollution in food and environment, SH Rajabnejad, H Badibostan, A Verdian, GR Karimi, E Fooladi, J Feizy, *Microchemical Journal*, 2020, 104722. Impact factor: **4.82**

13. Temperature and molecular crowding effects on the sensitivity of T30695 aptamer toward Pb^{2+} ion: a joint molecular dynamics simulation and experimental study, Z Khoshbin, MR Housaindokht, M Izadyar, MR Bozorgmehr, A Verdian, *Molecular Simulation*, 2020, 592-603. Impact factor: **2.18**

14. A low-cost paper-based aptasensor for simultaneous trace-level monitoring of mercury (II) and silver (I) ions, Z Khoshbin, MR Housaindokht, A Verdian, *Analytical biochemisty*, 2020, 113689. Impact factor: **3.36**

15. Design of a liquid crystal-based aptasensing platform for ultrasensitive detection of tetracycline, Z Rouhbakhsh, A Verdian, G Rajabzadeh, *Talanta*, 2020, 120246. Impact factor: **6.01**

16. A simple paper-based aptasensor for ultrasensitive detection of lead (II) ion, Z Khoshbin, MR Housaindokht, M Izadyar, A Verdian, MR Bozorgmehr, *Analytica chimica acta*, 2019, 70-77. Impact factor: **6.56**

17. Theoretical design and experimental study of new aptamers with the improved target-affinity: New insights into the Pb^{2+}-specific aptamers as a case study, Z Khoshbin, MR Housaindokht, M Izadyar, MR Bozorgmehr, A Verdian, *Journal of Molecular Liquids*, 2019, 111159. Impact factor: **6.16**

18. Recent progress in the development of recognition bioelements for polychlorinated biphenyls detection: Antibodies and aptamers, A Verdian, E Fooladi, Z Rouhbakhsh, *Talanta*, 2019, 123-135. Impact factor: **6.01**

19. Recent progress in the development of recognition bioelements for polychlorinated biphenyls detection: Antibodies and aptamers, A Verdian, E Fooladi, Z Rouhbakhsh, *Talanta*, 2018, 123-135. Impact factor: **6.01**

20. Detection of chloramphenicol using a novel apta-sensing platform based on aptamer terminal-lock in milk samples, M Javidi, MR Housaindokht, A Verdian, BM Razavizadeh, *Analytica chimica acta*, 2018, 116-123. Impact factor: **6.56**

21. Simultaneous detection and determination of mercury (II) and lead (II) ions through the achievement of novel functional nucleic acid-based biosensors, Z Khoshbin, MR Housaindokht, A Verdian, MR Bozorgmehr, *Biosensors and Bioelectronics*, 2018, 130-147. Impact factor: **10.62**

22. A sensitive electrochemical aptasensor based on single wall carbon nanotube modified screen printed electrode for detection of Escherichia coli O157: H7, MR Housaindokht, A Verdian, E Sheikhzadeh, P Pordeli, *Adv. Mater. Lett.*, 2018, 369-374.

23. Apta-nanosensors for detection and quantitative determination of acetamiprid–A pesticide residue in food and environment, A Verdian, *Talanta*, 2018, 456-464. Impact factor: **6.01**

24. Biophysical probing the binding properties of a Cu(II) complex to G-quadruplex DNA: An experimental and computational study, Mohammad Reza Housaindokht, AsmaVerdian-Doghaei, *Luminescence, 2016,* 22-29. Impact factor: **2.46**

25. Spectroscopic and molecular modeling study on the separate and simultaneous bindings ofalprazolam and fluoxetine hydrochloride to human serum albumin (HSA): with the aim of the druginteractions probing, F Dangkoob, MR Housaindokht, A Asoodeh, O Rajabi, Z Rouhbakhsh-Zaeri, **A Verdian-Doghaei**, *SpectrochimicaActa Part A: Molecular and Biomolecular Spectroscopy,* 2015, 1106–1119. Impact factor: **4.1**

26. Spectroscopic study of the interaction of insulin and itsaptamer - sensitive optical detection of insulin, A. Verdian-Doghaei, M. R. Housaindokht, *Journal of Luminescence, 159, 2015, 1–8.* Impact factor: **3.6**

27. Molecular crowding effects on conformation and stability of G-quadruplex DNA structure: Insights from molecular dynamic simulation, A Verdian-Doghaei, M R Housaindokht, M R Bozorgmehr, *Journal of Theoretical Biology*, 2015, 103–112. Impact factor: **2.69**

28. Conformational switch of insulin-binding aptamer into G-quadruplex induced by K^+ and Na^+: an experimental and theoretical approach, A Verdian-Doghaei, MR Housaindokht, MR Bozorgmehr, K Abnous, *Journal of Biomolecular Structure and Dynamics*, 2015, 1153-1163.

29. Spectroscopic and Molecular Modeling Based Approaches to Study on the Binding Behavior of DNA with a Copper (II) Complex. F VahdatiRad, MR Housaindokht, R Jalal, H EshtiaghHosseini, A Verdian-Doghaei, S. Sadeghi, Journal of fluorescence, 2014, 1225-1234. Impact factor: **2.22**

30. A fluorescent aptasensor for Potassium ion detection based triple-helix molecular switch, **A** Verdian-Doghaei, MR Housaindokht, Kh Abnous, *Analytical Biochemistry*, 2014, 72–75. Impact factor: **3.36**

31. Densities, Viscosities, and Volumetric Properties of Binary Mixtures of 1,2-Propanediol + 1-Heptanol or 1-Hexanol and 1,2-Ethanediol + 2-Butanol or 2-Propanol at (T = 298.15, 303.15, and 308.15) K, A Verdian-Doghaei, AA Rostami, A Omrani, *J. Chem. Eng. Data* 2010**,** 2894–2899. Impact factor: **2.69**

Research projects

- Green smart ink based on waste of shrimp and phytochemicals to monitor spoilage (project leader)
- Liquid Crystal aptasensors for measuring two seafood contaminants: phycotoxin and heavy metal ions (project leader)
- Liquid crystal biochip based on aptamer for detection and quantitative determination of Ochratoxin A (project leader)
- A novel liquid crystal-based aptasensor for sensitive detection of environmental pollutant Ochratoxin A (participation)
- A novel method for sensitive detection of lead (II) ion as an environmental pollutant and a threat to the health and safety of foodstuffs (participation)
- A novel method for sensitive detection of environmental pollutant Ochratoxin A (participation)
- Designing a Quality Assessment and Rice Ranking Model Based on Tayyib Indices (project leader)

- Colorimetric Tetracyclin aptasensor by masking surfaces of catalytically active gold nanoparticles (participation)
- A novel fluorescence aptasensor for the rapid determination of chloramphenicol in milk samples (participation)
- Fabrication of a crystal-liquid aptasensor for the detection of residual tetracycline in milk (project leader)
- Design and fabrication of a crystal-liquid aptasensor for detection of PCB77 (project leader)
- Rapid detection of E.Coli O157 in drinking water with the naked eye (participation)
- Electrochemical and spectroscopic study of the interaction of the bis(2-amino-4-methylpyridinium)transdiaquabis(pyrazine-2,3-dicarboxylato)-cuprate(II) hexahydrate with intramolecular G-quadruplex structure (participation)
- An electrochemical aptasensor for Ricin detection (participation)

Teaching Experience

- Physical Chemistry, engineering department, Payame Noor University of Mashhad, Mashad, Iran.
- General chemistry, Basic Sciences department, Payame Noor University of Mashhad, Mashad, Iran.
- Familiar with a variety of controllers in the food industry, Ph.D. of Food nanotechnology, RIFST, Mashad, Iran.
- Food Safety, Ph.D. of Food nanotechnology, RIFST, Mashad, Iran.

Education activities

- Design and validation of an amperometric biosensor for Quantitative determination of Methanol in Floral waters (advisor), Ms Thesis, Mashhad University of Medical Sciences

- Design Nano-aptasensor Chloramphenicol antibiotic in milk samples and physical biochemistry review (advisor), Ms Thesis, Ferdowsi university of Mashhad.

- Design, prepare and physical chemistry study of a novel aptamer-based nanobiosensor for simultaneous detection of mercury(II) and lead(II) ions, (advisor), Ph.D. thesis, Ferdowsi university of Mashhad.

- Design of colorimetric Nano-aptasensor for PCB77 detection based gold nanoparticles (advisor), Ms Thesis, Ferdowsi university of Mashhad.

- Study of the Interaction of Sunset Yellow and CTAB Surfactant for Application in Liquid Crystal Sensor (advisor), Ms Thesis, Private University in Bandar Abbas.

- Design of a sensitive optical sensor for the detection of the oral color of quinolone yellow based on liquid crystal (advisor), Ms Thesis, Private University in Bandar Abbas.

Conference presentation

- **A Verdian***, AA Rostami, A Omrani "Densities, Viscosities, Refractive Indexes and Excess Molar Volumes of Binary Mixtures (1, 2-Propanediol + 1- Heptanol, or 1-Hexanol) and (1, 2-Ethanediol + 2-Butanol, 2-Propanol) at various temperatures*." 12th Iranian Physical Chemistry Seminar, Kurdistan University, Sanandaj, Iran, 2009.*
- **A Verdian***, MR Housaindokht "Physico-chemical studies of the interaction between insulin and its aptamer (IBA) by using UV-Vis spectroscopy." *16th Iranian Physical Chemistry Seminar, Mazandaran University, babolsar, Iran, 2013.*
- **A Verdian***, MR Housaindokht, MR Bozorgmehr "The role of cations in stability of human telomeric G-quadruple: a Molecular Dynamics Simulation study" *16th Iranian Chemistry Seminar, Yazd University, Yazd, Iran, 2013.*
- **A Verdian***, MR Housaindokht, *Third National Conference on New Technologies of chemistry and chemical engineering, Islamic Azad University, Ghouchan, , Iran, 2014.*
- **A Verdian***, The Potential of aptamer-based biosensor for determination of gluten, The *1st " Nutrition: from Laboratory Research to Clinical Studies*" (NLRCS), 6-8 September, Mashhad, Iran, 2017.
- **A Verdian***, Recent advances in DNA-based biosensor for halal authentication - A review, *the 1st "international Halal conference*, Mashhad, Iran, 13-15 December 2017.
- **Asma Verdian***, Zahra Arefi, A novel enzymatic biosensor for the determination of Methanol, *2nd International and 25th Iranian Congress on Food Science and Technology*, Sari, Iran, 2018.
- **Asma Verdian***, Zahra Arefi, Methanol detection in some Iranian herbal-distillates using , *2nd International and 25th Iranian Congress on Food Science and Technology*, Sari, Iran, 2018.
- Z Khoshbin, MR Housaindokht*, M Izadyar, MR Bozorgmehr, **A Verdian,** The Investigation of the T30695 Aptamer Selectivity toward Pb^{2+} Ion: A Molecular Dynamic Simulation Study, *15th CBC Conference on Biophysical Chemistry*, 2018.

Awards

- **2010:** Top graduate degree from Mazandran University (MSc), Iran.
- **2014:** The best oral presentation award in Third National Conference on New Technologies of chemistry and chemical engineering, Islamic Azad University, Ghouchan, Iran.
- **2015:** The second top person in graduate degree (PhD), Ferdowsi University of Mashhad, Iran.

Society membership

- Member of Iranian chemical society (ICS) (2009 - present)
- Member of Iranian Society of Food Science and Technology (2017-present)

Professional Experience

- 2017-present: Assistant Professor in Research Institute of Food Science and Technology, Mashhad, Iran.
- 2020-present: Head of Education and Graduate Affairs

Languages

Farsi: mother tongue.
English: Speaking, Listening (Upper Intermediate) and Reading, Writing (Advanced)