Curriculum Vitae

Ehsan Soheyli

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https://scholar.google.com/citations?user=PGYh1XQAAAAJ&hl=en

➢ Research Interests

My previous research activities lie in Semiconductors, ranging from ***Amourph glasses*** to ***Colloidal Nanocrystals (NCs)*** and ***Nanostructured thin films; Synthesis and Characterization***.

My main research interest is, **Synthesis and development** of **luminescent semiconductor NCs** with desired **photophysical** features, and **Understanding** the **fundamental physics and chemistry** behind their properties in **Optoelectronics**.

➢ Academic Qualifications

I. Postdoctoral Research Fellow — Kayseri, Turkiye. 2021-2023

Title: Synthesis of **Colloidal InP-based** QDs for Light-display purposes via **Hot-injection approaches.**
PI: Professor Evren Mutlugun, Department of Electrical-Electronics Engineering, Abdullah Gul University.
https://www.mutlugunlab.net/

II. Research Assistant — Ilam, Iran. 2017-2020

Researcher in: Physics and Chemistry of Colloidal Semiconductor QDs and Thin Films
PI: Dr. Reza Sahraei, Physical Chemistry, Faculty of Science, Ilam University.
https://www.researchgate.net/profile/Reza-Sahraei
Area of experience: Colloidal synthesis methods (II-VI, I-III-VI, Perovskites), Thin-film deposition, PL emission/excitation spectroscopy, UV-Vis Spectroscopy, Structural Analysis

III. Doctor of Philosophy Degree — Arak, Iran. 2013-2017

Majors: Physics (Physics and Chemistry of Solids, Solid State Physics: Experimental)
Department of Physics, Faculty of Science, Arak University.
Thesis title: Magnetic Elements-doped Semiconductor Nanocrystals: Synthesis, Characterization, and Investigation of Possible Improvements of Their Optical and Magnetic Properties.
Supervisor: Prof. Dr. Gholamreza Nabiyouni (Solid State Physics) & Dr. Reza Sahraei (Physical Chemistry)
Area of experience: Colloidal synthesis methods, Thin film deposition, PL emission/excitation spectroscopy, UV-Vis spectroscopy, FT-IR spectroscopy

IV. Master of Science — Tabriz, Iran. 2010-2012

Majors: Physics (Solid State Physics- Experimental)
Department of Physics, Faculty of Science, **Sahand University of Technology**.
Thesis title: Possibility of Glass Preparation with Combination of P_2O_5-V_2O_5-MoO_3-CaO-Li_2O and Study of their Physical (electrical, optical, structural and thermal) Properties
Supervisor: Professor Mohammad Hossein Hekmatshoar (Solid State Physics)
Relevant Courses: Physics of thin films, Special issues (Semiconductor devices), Electrical properties

V. Bachelor of Science — Isfahan, Iran. 2006-2010

Majors: Physics

Department of Physics, Faculty of Science, **University of Isfahan**.

Relevant Courses: Electronics 1 & 2, Electronics lab, Crystal growth, Laser, Optics, Optics lab.

➢ Research Experiences

I. Hands-on experience in colloidal preparation of **Colloidal semiconductor QDs** (in various structures of binary, ternary, alloyed, doped, and core/shell).

II. Experienced with **Luminescent Metal-halide Perovskites** including: colloidal perovskite, colloidal perovskite@MOF composites, and perovskite@glass composites.

III. Hands-on experience in microwave/solvothermal synthesis of **Carbon dots** and **Column chromatography** process for purification.

IV. Hands-on experience in **fabricating nanostructured-thin films**.

V. Hands-on experience in preparing amorphous semiconductor glasses.

VI. Experience with **air-sensitive chemistry**, and knowledge of nanomaterials preparation, handling, and characterization.

VII. Hands-on experience in using **Glove-Box**.

VIII. Hands-on experience in the fabrication of **QLEDs**.

IV. Experienced in **data analysis**;

1. Optical characteristics (PL, PLE, TRPL, UV-Vis).
2. Structural characteristics (XRD, TEM, SEM, XPS, EDX, ICP-AES, FT-IR, Raman, DSC, TGA).
3. Electrical and Electrical switching properties.

V. Hands-on experience in **operating characterization tools**

1. Photoluminescence (excitation/emission) spectroscopy, Time-resolved PL spectroscopy and Absolute PLQY
2. UV-Vis and FT-IR spectroscopies
3. Temperature-dependent electrical conductivity measurements
4. XRD analysis

VI. Computer skills

1. Microsoft Office (Word, PowerPoint, Excel)
2. Origin
3. Mendeley/ Endnote

VII. Lectures and Workshops

1. **Invited Speaker:** Iran- Ilam University- "Quantum Dots; Physical and chemical principles, and an overview toward their applications".
2. **Workshop**: "Photoluminescence in semiconductor nanocrystals; The theory of absorption/emission and working with the UV-Vis/PL spectrometers"- (25 students in physics, chemistry, and chemical engineering)- 2019- Ilam University- Iran.

VIII. Attending Workshops

1. Workshop Modern characteristics of nanomaterials and nanocatalysts- Researches Center of Reactor and Catalysis- Sahand University of Technology- 8 hours- 2013.
2. UV-Vis/FTIR Spectroscopy- 4 hours- 2021
3. $X_{\text{-ray}}$ Diffraction Analysis (Crystallography, XRD, Xpert, GIXRD, SAXS, OriginPro)- 25 hours- 2021

Curriculum Vitae

➢ Publications

I. Book

Luminescent Perovskite Nanocrystals; Reza Sahraei, **Ehsan Soheyli**, … (In Persian).
https://www.gisoom.com/book/11712015/کتاب-نانوبلورهای-پروسکایت-نورتاب/?utm_source=wts

II. Journal Publications

https://scholar.google.com/citations?user=PGYh1XQAAAAJ&hl=en

III. Some of Conference Papers

1. **E. Soheyli**, G. Nabiyouni, R. Sahraei, S. Soheyli, "Influence of solution pH on optical properties of ZnSe quantum dots", **Poster**, Annual Advanced International School on Low Dimensional System, Research Institute for Applied Physics and Astronomy, **University of Tabriz**, 2016.
2. R. Sahraei, P. Kaboutari, **E. Soheyli**, M. Soleiman-Beigi, "Dopant Concentration Effects on Mn-doped ZnO Thin Films", **Poster**, 18th Iranian Physical Chemistry Conference, **Kish Island**, 2016.
3. **E. Soheyli**, G. Nabiyouni, R. Sahraei, "Effect of ZnS shell on optical properties of Ni-doped ZnSe nanocrystals", **Poster**, 20th Iranian Physical Chemistry Conference, **Arak University**, 2017.
4. **E. Soheyli,** S. S. Ozel, E. Mutlugun, "Large Scale Synthesis of Highly Emissive InP/ZnSeS/ZnS Quantum Dots", **Poster**, Fotonik 2022, **Bilkent University**, Ankara, Türkiye, 2022.
5. **Ehsan Soheyli**, Aysenur Arslan, Sultan Suleyman Ozel, Kevser Sahin Tiras, Evren Mutlugun, "Tuning the Shades of Red Emission in InP/ZnSe/ZnS Nanocrystals with Narrow Emission Profile for Fabrication of Light-Emitting Diodes", **Oral Presentation**, NANAX10, Vienna, **Austria**, 2023.

➢ Reviewing Journal's Article

Journal of the Australian Ceramic Society, 2019.
Journal of Physics D: Applied Physics, 2020.
Journal of Alloys and Compounds (4), 2020, 2022.
Nanotechnology (5), 2020-2022.
Chemical Sciences, 2023.
ACS Applied Nano Materials, 2023
Journal of Industrial and Engineering Chemistry, 2021.
Applied Physics A (3), 2021-2022.
Inorganic Chemistry Communications, 2022.
Optical Materials (3), 2022, 2023.
Surface and Interfaces, 2022.
Materials Research Express (2), 2022-2023
Methods and Applications in Fluorescence (2), 2022.
Optik, 2022.

- ***Trusted Reviewer Award- IOP Publishing***, 2020.

➢ Projects

1. Improvement of optical properties of ZnSe nanocrystals for possible light-emitting applications- Arak University- 2016.
2. Phytosynthesis of silver nanoparticles and investigation of their bactericidal and antioxidant effects- Ilam University- 2018. (http://jns.kashanu.ac.ir/article_104447.html)

3. Synthesis and characterization of multinary In-based quantum dots with intense/ tunable emission, and investigation of their biological applications- Ilam University (in collaboration with School of Advanced Technologies in Medicine, Tehran University of Medical Sciences)- 2018. (https://www.sciencedirect.com/science/article/pii/S092849311934514X)
4. Investigation of electro-optical properties of nematic liquid crystals doped with quantum dots- (in collaboration with Department of Physics, Shahid Chamran University of Ahvaz, Ahvaz, Iran)- 2019. (https://www.sciencedirect.com/science/article/abs/pii/S0167732220335820)
5. High-quality InP-based quantum dots for optoelectronic applications (Türkiye)- 2021-2023 (https://pubs.acs.org/doi/full/10.1021/acsomega.3c05580)
6. Carbon dot-based nanocomposites with improved solid-state light emission for efficient LEDs (Ilam University, Iran- Zhengzhou University, China). (https://www.degruyter.com/document/doi/10.1515/nanoph-2023-0578/html)

➢ Teaching

1. Principle of biomechanics and motion analysis, 2013, Payam Nour University, Ilam Branch.
2. Physics (Mechanics), 2014, Azad University, Shahre-ray Branch, Tehran, Iran.

3. Physics (Mechanics) 4. Physics Lab (Mechanics) 5. Physics Lab (Electricity and magnetism) 6. Optics Lab 7. Modern Physics 8. Modern Physics Lab 9. Applications of Physics in Petroleum Engineering	2015-to- 2024, Department of Physics, Ilam University, Ilam, Iran

➢ Advisor (Co-supervising) of Postgraduate students

1. **One master thesis in Solid State Physics (Sahand University of Technology) – 2015.**

- **Mahsa Baazm**

Title: Study of preparation process of amorphous solids based on phosphate, containing one of the conditional glass-former oxides and lithium oxide and investigation of their physical properties. https://doi.org/10.1016/j.ceramint.2018.02.158.

2. **One Ph.D. thesis in Solid State Physics (Arak University) – 2021.**

- **Sadaf Samiei**

Title: Bright and stable PL emission of fully-inorganic **perovskite nanocrystals** employing glass matrices. https://onlinelibrary.wiley.com/doi/abs/10.1002/smll.202307972

3. **Fourteen postgraduate theses in Physical/ Inorganic Chemistry (Ilam University) – 2017-to-2023.**

- **Farzaneh Khani Kharabaneh**

Title: Preparation of nanostructured Mn-doped cadmium sulfide thin films using a developed nucleation-doping method. https://www.sciencedirect.com/science/article/pii/S0272884220331795.

- **Parisa Khani**

Title: Preparation and characterization of nanostructured Co-doped cadmium sulfide thin films using chemical bath deposition technique: optimization of their emission properties. https://www.sciencedirect.com/science/article/abs/pii/S0921510721002889.

Curriculum Vitae

- **Davoud Azad**

Title: Synthesis and optimization of photoluminescence emission properties of $AgInS_2$ quantum dots. https://www.sciencedirect.com/science/article/abs/pii/S0927776519305235.

- **Nawzad Nazem Jawhar**

Title: Synthesis and characterization of Cu-In-S/ZnS quantum dots and optimization of their emission properties. https://www.sciencedirect.com/science/article/abs/pii/S0925838820302693.

- **Sirous Zargoush**

Title: Colloidal preparation of alloyed ZnTe-based quantum dots with controllable emission characteristics for possible potential in Color Conversion. https://iopscience.iop.org/article/10.1088/1361-6463/ac26f5/meta.

- **Zahra Sabzevari**

Title: Synthesis, characterization, and optimization of optical properties of emissive Zn-Ag-In-S quantum dots. https://aip.scitation.org/doi/abs/10.1063/5.0038696.

- **Miss Savaedi, Miss Havasi, Miss Omidi.**

Three master's theses on *colloidal Carbon dots*.
https://iopscience.iop.org/article/10.1088/1361-6528/ac7c27

- **Miss Bastam** & **Miss Jayervandi**

Two master's theses on *MoS_2 colloidal NWs and Thin films*.
https://pubs.acs.org/doi/10.1021/acsaelm.2c00485

- **Miss Naeem** & **Miss Hemmati** & **Miss Bagheri**

Three Ph.D. and master's theses on ***metal halide perovskite NCs@MOF composites***.