

# Alireza Nikbakht

## Curriculum Vitae

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### Education

- 2015–2018 M.Sc. Biomedical Engineering**, Iran University of Science and Technology, Tehran, Iran, GPA 18.2 (out of 20), Specialization: Biomaterials
- Thesis title: Fabrication and Evaluation of Mechanical and Tribological Properties of UHMWPE-based Nanocomposites Reinforced with HA, ZrO<sub>2</sub> and Carbon Nanotube
- Supervisors: Professor H. R. Rezaie & Professor J. Javadpour
- 2008–2014 B.Sc. Biomedical Engineering**, Islamic Azad University, Science and Research Branch, Tehran, Iran, GPA (last two years) 16.60 (out of 20), Specialization: Biomaterials
- Thesis title: Fabrication of Gelatin-coated Polycaprolacton Porous Scaffold Using the Freeze-Drying Method
- Supervisor: Dr. A. Asefnejad

### Awards and honors

- 2016** Ranked 1<sup>st</sup> (highest GPA) among M.Sc. students of metallurgy and materials science department, Iran University of Science and Technology, M.Sc.
- 2015** Ranked top 1% among ~30,000 participants in Iranian university postgraduate entrance exam
- 2012–2013** Student with the highest distinction in biomaterial department, Islamic Azad University, Science and Research Branch, Tehran, Iran, B.Sc.
- 2008** Ranked top 1% among ~500,000 participants in Iranian university entrance exam

### Publications and presentations

- 2021 Alireza Nikbakht**, Jafar Javadpour, M. Reza Naimi-Jamal, Hamidreza Rezaie. "Fabrication and Evaluation of Mechanical and Tribological Properties of Ultra-High-Molecular-Weight-Polyethylene (UHMWPE) Based Nanocomposites Reinforced with Hydroxyapatite, Zirconia and Multi-walled Carbon Nanotubes." bioRxiv (2021).  
doi: <https://doi.org/10.1101/2021.05.03.442451>
- 2017** Evaluation of UHMWPE Based Composites Properties in Orthopedic Application. Iran University of Science and Technology, department of biomaterials

### Research interests

- Tissue Engineering
- Biocomposites
- Biosensors
- Machine learning applications in biomaterials and bioinformatics
- Polymer science
- Drug delivery systems
- Microfluidics

## Experience

### Lab experience

- Drug release testing (sample and separate)
- Freeze drying (porous scaffold fabrication)
- Synthesis of HA
- Scanning Electron Microscopy
- Cytocompatibility tests (MTT assay)
- Electrospinning (scaffold fabrication)
- Hot press's compression molding
- Functionalization of carbon nanotubes
- Wet grinding
- Mechanical testing (nanoindentation)

### Data Science and Machine Learning skills

Advanced Data science in Python (Pandas, NumPy, Seaborn, Bokeh) and R (plotly, ggplot2, dplyr)  
 Intermediate Machine learning: Clustering, Regression, Classification, Neural Networks (Scikit-learn, Keras), Relational databases (SQL)

### Vocational

- 2018–2019** Research assistant (Data science) Applied Research Center Valiasr Hospital, Tehran, Iran  
**2018–2019** Member of the scientific review committee ( Iranian Journal of Police Medicine) Valiasr Hospital, Tehran, Iran  
**2014–2015** Leading the medical equipment calibration and maintenance, Sajad Hospital, Tehran, Iran

### Teaching

- 2016–2021** Teaching English (Shokouh English Institute)  
**2017–2018** Teaching Python programming and data science (Iran University of Science and Technology, Tehran, Iran)

### Advising

- 2017–2018** Multiple undergraduate projects

### Miscellaneous

- 2018–2019** Member of translation team and the organizing committee for two international congresses and symposiums  
**2009–2010** Volunteering at Tehran City Hall; event planning, organizing conferences

## Online courses

- 2021** Intermediate R  
**2021** Introduction to deep learning in python  
**2021** Machine learning with Python  
**2020** Data manipulation with pandas  
**2020** Intermediate Python  
**2016** Intro to Python for data science course  
**2016** Supervised machine learning with scikit-learn course

## Languages

Persian Native speaker  
 English Fluent  
 IELTS overall score 7.5 – GRE quantitative 157, verbal 150, writing 3  
 French Basic

## Conference attendances

- 2018 1<sup>st</sup> Iranian International Tissue Engineering and Regenerative Medicine Congress, Tehran University of Medical Sciences, School of Advanced Technologies in Medicine
- 2018 7<sup>th</sup> Iranian Conference on Bioinformatics
- 2014 Iranian Conference on Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic)
- 2012 Developmental Biology in Tissue Engineering, Biomaterials department of Islamic Azad University Science and Research Branch

## Selected course projects

- Spring 2017 **Polymers & their application in biomedical engineering**  
A review on polymers application in gene therapy
- Spring 2017 **Biocompatibility**  
A review on biological assays and their applications in biomaterials
- Fall 2017 **Composites & their application in biomedical engineering**  
UHMWPE based composites and their application in total joint replacement
- Fall 2016 **Tissue engineering**  
Biodegradable polymers and their applications in liver tissue regeneration
- Fall 2016 **Drug delivery systems**  
Smart hydrogels and their application in drug delivery systems

## Hobbies

Music, Theater, Reading, Soccer, Cooking

## References

- Prof. Mohammadreza Naimi-Jamal  
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