

Statement of Purpose

One of the greatest challenges we face as individuals are finding our passions and leading our lives toward satisfaction. I was one of the few lucky enough to realize my interests early, allowing me to follow them. My interest in the field of chemistry was sparked during high school and drove me to pursue my academic studies in this field. Seeing how almost all the aspects of our lives are somehow related to chemistry, it became clear to me how despite being one of the most fundamental and essential fields of sciences, a wide and varying range of possibilities lie within it, owing to its interdisciplinary and integral nature. It can be deduced without a doubt that the human race is indebted in most, if not all, of its modern comforts to chemistry and depends critically on this field to advance them further. Noticing within myself the ability to contribute to a small part of this great endeavor fills me with excitement and motivates me to take further steps in attaining mastery in my field.

Having found my path in high school, I acquired my diploma with considerable grades in chemistry and went on to study it for my bachelor's degree. During my studies, courses such as Analytical Chemistry, Instrumental Chemistry, Organic Chemistry, and their related laboratory courses piqued my curiosity. I took a liking to these subjects, completing them with noteworthy grades. During and after my bachelor's studies, I cooperated with the Sharif University of Technology scientific community called Kavosh. Here I completed research projects under the titles of "Research In The Field Of Synthesis Of Nanomaterials And Safety Tips For Working With Nanomaterials And Their Impact On Human Health And The Environment" and "Research In The Field Of Recycling And Management Of Chemical Waste And Doing Practical Work In The Above Fields In The Laboratory Of Dr. Terpogosyan At the Sharif University Of Technology." I also completed my bachelor's internship at East Tehran Water and Wastewater Treatment Plant and took up the practice and theory of water quality control. In line with my achievements, I was deemed worthy of benefiting the quota provided by the National Organization for Development of Exceptional Talents, enabling me to be accepted into the Sharif University of Technology for my Master's studies without participating in the entrance exams.

I chose Analytical Chemistry for my Master's studies. I enjoyed examining different analytes in varying environmental matrices, learning niche sample preparation methods, and working with intricate analytical equipment such as the GC-MS. I was eager to pursue knowledge and persisted in my studies with vigor. The results of my Master's studies can be boiled down to an article I published and another conference paper that ensued. My Master's thesis is titled "Nanomagnetic Polyamidoamine Dendrimer as a Novel Sorbent for Solid Phase Microextraction of Chlorophenols from Aquatic Media," where I discuss the synthesis of a third-generation polyamidoamine dendrimer with a Fe_3O_4 core and methods for coating it on metallic surfaces as means of producing SPME fiber; these are then utilized for solid-phase microextraction of chlorophenols from aquatic sources such as a river or seawater. After attaining my Master's in analytical chemistry, I had to busy myself with an occupation at Sepidnegar Co. as a Technical Assistant (Sept 2016 - Sept 2018) due to financial struggles. In 2018 I joined a research team led by Dr. Seyedi as a Research Assistant. His projects were very in line with my previous works during my Master's studies, with the addition of intricacies such as the chemical analysis of medicinal compounds in complex matrices such as blood and saliva. Here I worked on the synthesis of novel absorbents with high capacities, such as perforins, hydrogels, nanocubes, double-layer hydroxides, electrospinning nanofibers, and their utilization

in small-scale solid phase sample preparations for metals and drugs from complex biological media such as blood, urine, saliva, breast milk, and other biological tissues. I worked with the following analytical equipment during my research: HPLC-UV, LC-MS/MS, GC-FID, GC-MS, and Atomic Absorption Spectroscopy. By 2021 I had published several articles with Dr. Seyedi and Dr. Ahmad Rouhollahi in international journals with plausible Impact Factors. Among them are two noteworthy review articles: “Emergence of Microfluidic Devices in Sample Extraction; An Overview of Diverse Methodologies” and “Recent Advancements in Application of Magnetic Nanomaterials in Magnetic-Chromatography: A Review.” I also attended three conferences and have several papers ready for submission or arbitration. Among them is an article on the effect of magnetic and electric fields on the solid absorbent phase loaded into the microfluidic chips.

Given that I have studied at one of the top Universities in my country and have learned from and worked with some of the best professors in my field here, I saw it appropriate to pursue my Ph.D. at Washington State University. I have chosen this University in accordance with my research interests that concern the following fields: Biosensors, Environmental, Microfluidics, Bioanalytical chemistry, mass spectrometry, and drug delivery. Being equipped with state-of-the-art technologies and staffed by world-renowned researchers and professors, I am confident I will reach the academic heights I have aimed for at this university. I believe that completing my Ph.D. at Washington State University will better prepare me for the academic future I have in mind for myself. Following my research interests, I would like to work in research and development labs and facilities where I could apply my knowledge to advancing research and helping humanity or help nurture the brilliant minds of the future as a professor. In any case, I would like to continue the endless journey of learning and researching in my field of study and help propel the human race toward a better future.