

Understanding the behaviours of proteins in aqueous solutions and their natural systems is one of the greatest challenges for producing effective drugs and drug delivery systems. Investigations into simpler systems or homogenic liquids of simple solutions and mixtures are a useful basis, since they are easier to study with diffraction processes and easier to simulate with a program. Once we have a good understanding of simpler liquids, we can apply this experience and improved methods to study the truly complex solutions.

My interest in science led me to participate in different international and national competitions. I won a bronze medal at the International Junior Science Olympiad (IJSO) in Pune, India in 2013; a silver medal at the European Union Scientific Olympiad (EUSO) in Klagenfurt, Austria in 2015; and 5th place among the under 12th graders in the qualifier for the International Chemistry Olympiad (IChO) of 2015, thus qualifying for the Mendeleev Olympiad. I also came 5th at the IChO qualifier in 2016. At national level, I won 2nd place (in 2015 and 2016) and 3rd place (in 2014) at the Marie Curie National Chemistry Competition, and 3rd place (in 2016) and 10th (in 2015) at the National Chemistry Olympiad. The IChO sorting competitions required high level theoretical and experimental problem solving skills, and we had to absorb and apply a lot of new information. At EUSO, we worked in teams consisting of a physicist, a biologist and a chemist (me) to solve complex, experimental problems. The IJSO competition had two theoretical and an experimental part and also required extensive teamwork. The greatest challenge, however, was to combine and apply advanced knowledge of chemistry, physics and biology

I also participated in two summer research camps organised by the Hungarian Academy of Sciences. In the first my topic were nanoparticles and their layers. Synthesising different gold nanoparticles that generated differently coloured gold sols, I understood how the different sizes and shapes of the particles caused their altering colours. I also synthesised silica nanoparticles, prepared nanostructures and then took pictures with a scanning electron microscope. In the second camp, I worked in a modern organic chemistry lab, building a fluorescent labelling compound that connects to special receptors or parts of viruses and can thus be used to indicate diseases. In 2016, I started a research project with my father, a chemist and researcher, to investigate the molecular structure of tetrahedral molecules and, in particular, liquid ammonia. Although there are a number of experimental and simulation techniques and much research has gone into studying liquids containing tetrahedral molecules, the investigation of ammonia is not complete yet. This research is interesting since ammonia is one of the most important intermediate products of the chemical industry worldwide, providing the starting point for the synthesis of countless compounds.

Besides being active academically, I enjoy a busy social life as well. For six years, I was an active member of my school's Student Council and organiser of different camps, and for 10 years I played soccer, basketball and handball at competition level. I am a great fan and practitioner of healthy world cuisine. To prepare for studying in the UK, I joined the Milestone Institute of Advanced Studies in 2015 and completed rigorous coursework in natural sciences, including modules in natural science skills, Algebra and Geometry, Mechanics, Calculus, Advanced Physics and Engineering, all in English. I also developed my skills in academic writing, public speaking, debating and analytical methods.

Given my multidisciplinary interests in natural sciences and my ambition for research, I decided to apply to study in the UK. The holistic approach to natural sciences makes the

courses on offer unique. It would be a dream come true to do research at a leading science university in the UK.