

## **2020, Natural Sciences (Physics), Christ's College**

Competing in four international competitions in a single year was a unique challenge, but a rewarding one without doubt. I have always been enthusiastic about solving problems, which require logical thinking. Firstly, I was interested in mathematics and my interests have gradually extended to physics and chemistry. It is of special interest to me how by the assembly of experimental arrangements we can convert mathematical explanations into actual results either in the field of chemistry or physics.

With the encouragement of my teachers I started participating at national physics and chemistry competitions at the age of 12. I consider as my greatest achievements: Bronze medal at the International Chemistry Olympiad (2019), Bronze medal at the International Olympiad on Astronomy and Astrophysics (2019), Bronze medal at the International Mendeleev Chemistry Olympiad (2019), Gold medal, Absolute Winners at the International Chemistry Tournament (IChTo, 2019), Silver medal at the IChTo (2018), Silver medal at the European Union Science Olympiad (2018).

For these I covered topics which extend over the secondary school topics. Those include mechanism of organic reactions, polymer chemistry, NMR spectroscopy, reaction kinetics for the IChO and celestial mechanics, cosmology, celestial coordinate systems, instrumentation and space technologies for the IOAA. The EUSO was a team competition based on experimental problems. I would highlight an interesting competition: IChTo, a debate type tournament, where we discussed open-ended problems, which required both chemical and physical thinking. I especially enjoyed working in a team and delving deeper into literature which are both important aspects of research.

I have performed well at international competitions, for which the national competitions were of great practice. At the Chemistry and Physics national competitions I have always been among the top participants throughout my secondary school years.

On these competitions my greatest successes are 1st place at Olah Gyorgy Chemistry Competition (2017), 2nd place at Mikola Sandor National Physics Competition (2017), 3rd place at Irinyi Janos Chemistry Competition (2017), 6th place at the Szilard Leo Modern Physics competition (2018), 6th and a 9th place on the National Olympiad in Chemistry (OKTV), an 11th and a 15th place on the National Olympiad in Physics (despite competing as a 10th and 11th class student).

In 2018 I joined a research programme at ELTE University in Budapest. The aim of the programme is to define combustion reaction mechanisms with the use of modelling with a software and comparing the results to measured data.

This year I wanted to get an insight to astrophysics research, as it seems to be a possible part of sciences to specialise in, so I joined a research group. The purpose of the project is

to find potential sources of high energy extragalactic neutrinos with the use of the data obtained in the IceCube neutrino observatory and the Glade galaxy catalogue. So far only two extragalactic neutrino sources have been clearly identified, so aiding the localization efforts is a crucial task to learn more about possible neutrino generating high-energy processes. I use the acquired knowledge to regularly help my classmates in chemistry and physics, and underclass students interested in natural sciences to practice higher level tasks. I also helped building relations with our foreign partner school in Ljubljana. In my free time I play volleyball and we often play football with my friends. I am a member of the debating society of our school too, and we discuss political and social issues.

I am looking forward to studying at a leading university in the UK, as the academic environment, the cutting-edge research and the high-quality facilities would be ideal for my progress.