To know where we are going, we must understand where we have come from. That is why I am excited to start this series of articles focusing on those who helped shape the separation sciences we know today, starting with Mikhail Tsvet – the unrecognized father of chromatography.

Mikhail Tsvet was born in Asti, Italy to an Italian mother and Russian father in 1872. After his mother passed away, he moved with his father to Geneva. He attended school there and later graduated from the University of Geneva with his bachelor’s degree in Science in Mathematics and Physics. He then went on to get his doctoral degree in botany after researching cell physiology. However, when he followed his father back to his homeland of Russia at the age of 24, Tsvet was forced to re-earn these degrees as they were not honored in Russia at that time.
After some time, he began work at the Biological Laboratories in the Russian Academy of Sciences on plant pigmentation. This work continued at the Institute of Plant Physiology at Warsaw University in Poland. Due to upheaval in the region, Tsvet spent the remainder of his life moving around Eastern Europe escaping WWI, continually trying to further his beloved research.

As a botanist, Tsvet was enamored by the pigmentation of plants. This fascination eventually led him to perform critical experiments which would later be known as absorptive
chromatography. During the late 1800’s it was thought that leaves contained two pigments contributing to their color: chlorophyll and xanthophyll. Tsvet first extracted leaves, then flowed the extract through a glass vertical column filled with calcium carbonate using a combination of petroleum ether and ethanol. The column was able to separate the chlorophyll into two different bands and resulted in an additional eight bands found to be different pigments attributed to the leaves colors. He published his first findings in 1901 at the Congress of Naturalists and Physicians in St. Petersburg, Russia.

In 1906, Mikhail Tsvet first coined the term “chromatography” in two papers in the German Botanical Journal *Berichte der Deutschen botanischen Gesellschaft*. In the papers he explains that he derived the name from a combination of two Greek words: chroma or “color” and graphein, meaning “to write.” Both names were an appropriate fit, because Tsvet’s work specifically focused on separating a plant’s pigmentation.

Sadly, Tsvet’s work in the field of chromatography largely went unnoticed for a number of reasons, the first of which being the general unrest in Eastern Europe during both World Wars. Additionally, his work was originally published in Russian—a language few chemists spoke. Lastly, a few of his contemporaries replicated his experiments incorrectly resulting in poor results and a distrust of the technique.

Modern chemists are now aware of how vital and significant Mikhail Tsvet’s work was to the discoveries and innovations of separation sciences. Many of us owe a debt of gratitude to this relatively unknown but influential botanist.
Look forward to our next installment of ‘The People Who Shaped Chromatography’ where we will take a look at Archer Martin and Richard Synge contribution to the field in 1940’s.

Interested to learn about more people who made waves not only in chromatography, but in the science industry? Check out some of the article below:

“Google Honors Danish Biochemist Responsible for the pH Scale – SPL Sørensen”

“Katsuko Saruhashi – Made Waves in Seas and for Women in Science”
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