Dr. Alex J. Stirk

Bio

Originally from Great Wyrley in the West Midlands of England, Alex completed his BSc in 2012 at the University of Leeds in West Yorkshire. During his time at Leeds he was bitten by the research bug while working with Prof. Terry P. Kee in the prebiotic chemistry of phosphorous. In a departure from seeking the origin of life, Alex moved to Windsor, Ontario in 2013 to study solid state molecular machines with Prof. Stephen J. Loeb at The University of Windsor. Graduating with his PhD in 2018, Alex was concerned about his employability considering his lack of publications, visa status, being a millennial, and lack of understanding when something should be taken seriously. Deciding to stay in Canada and after a wide employment search, Alex found employment as a crystallographer and solid-state chemist in the Research & Technology (R&T) group at Apotex Pharmachem Inc. in Brantford, Ontario.

His research in the R&T group involves the solid-state chemistry of active pharmaceutical ingredients and their impact on generic pharmaceutical intellectual property. This work involves a multi-disciplinary team of crystallographers, crystal engineers, organic chemists, analytical chemists, chemical engineers and patent agents. Outside of pharmaceuticals Alex's research interests are the chemistry of mechanically interlocked molecules, metal-organic frameworks, topology, cocrystals and firing X-rays at things.

Abstract:

So You've Decided to Make a Generic Pharmaceutical

Dr. Alex J. Stirk

Your boss comes to you one day, places a house brick in your hand and tells you to build a brick wall. They then proceed to give you many specifications that you must meet, however you must not copy previously built walls! What do you do? How do you place the bricks in order to build the wall so that it is still the same as other walls – but different?

The solid-state form of generic pharmaceuticals is like this situation. You can only use the brick that you are given (in this case a particular active pharmaceutical ingredient), yet you must be innovative and novel when compared to the brand pharmaceutical. When developing a new pharmaceutical solid form there are many pitfalls that one must avoid so that your form may eventually help patients in need. Some of these pitfalls are chemical in nature, while others legal. This talk outlines the dos and don'ts of crystal engineering a hypothetical successful generic pharmaceutical. The differences between industrial and academic concerns will also be discussed with an attitude towards helping both fields understand each other.