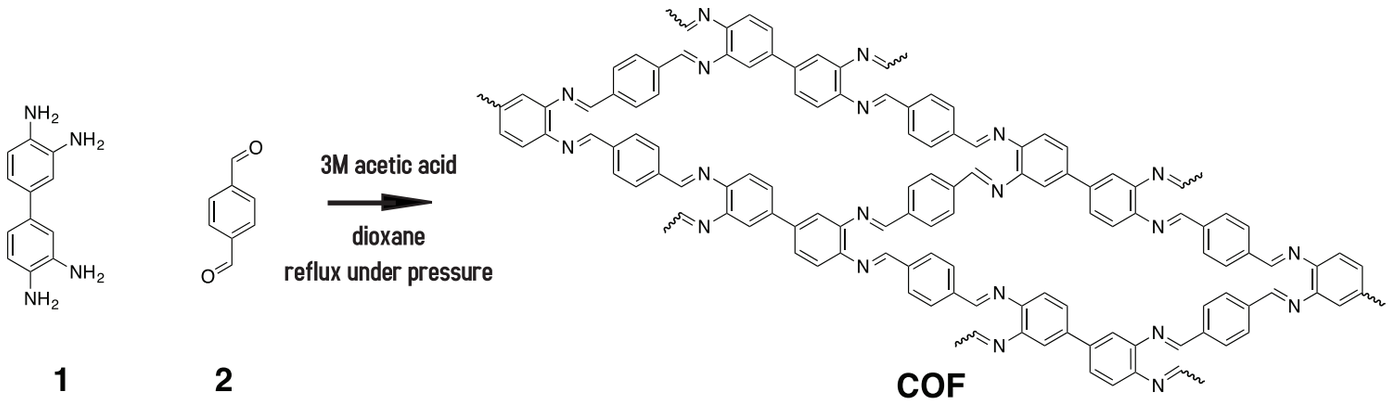

Figure 1. Asymmetrical starting materials (Structure 1) will create an asymmetrical COF, preventing it from being truly crystalline (Structure 3).

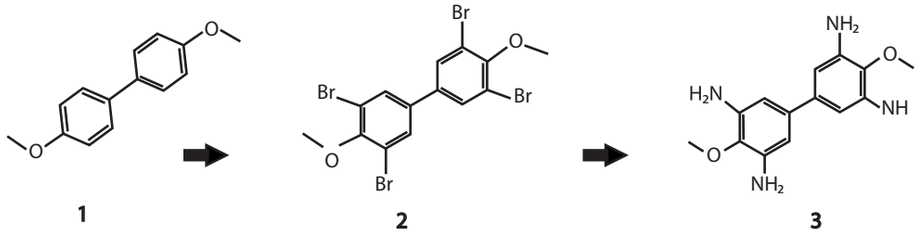

Figure 2. Perfectly symmetrical starting materials (Structure 1) will create a perfectly symmetrical and truly crystalline COF (Structure 3).

a very indirect and convoluted path to the cathode, losing as much as 80% of energy as heat along the way. This is extremely inefficient. Sukanick and Allen hope that their symmetrical crystalline structure COF would make a much more direct route for the electricity to flow and therefore waste less energy along the way. While the solar energy process is more complicated, this is the basic idea behind COFs.

WHAT'S THE FUTURE OF COFs?

Sukanick and Allen hope that their COF research will be applied to increasing solar panel efficiency in the future. COFs possess high capacity for the storage and separation of gases such as carbon dioxide, hydrogen, and methane, and will possibly become a common method for transportation of these materials. Therefore, COFs may have future applications in the absorption of CO_2 from the atmosphere to reduce global warming. Catalysis, or the speeding up of chemical reactions, is another possible application for COFs in the future.

WHAT'S THE FUTURE OF NATALIE SUKANICK?

As Natalie Sukanick prepares for graduation in May 2019, she frequently thinks back on her experiences as a student researcher. Being a full-time student on the lacrosse team with a job is never easy, and yet adding the enormous commitment of research is quite a feat. Throughout her years at Millersville University, she has navigated her way through the treacherous temptations of procrastination, the stress of learning time management, and the initial awkwardness of professional networking. Despite this, she has managed to maintain grades, a semblance of a social life, and a co-dependency with caffeine like many of her fellow classmates. However, undergraduate research will set her apart in a future interview. As she prepares for graduate school at the University of Maryland School of Pharmacy, she encourages students to overcome the struggles associated with student research despite their worries and doubts; this makes her a model student for those pursuing scientific academia.

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