

## **Amphidynamic Behavior in Covalent Organic Frameworks probed via Powder X-ray Diffraction and $^{13}\text{C}$ CP-MAS $T_1$ relaxation experiments**

We present a family of crystalline covalent organic frameworks functionalized with pendant oligo-ethylene oxide side-chains. This functionalization produced materials that exhibit amphidynamic behavior, where the side-chains possess dynamic movement and the framework itself remains rigid. We have attached various functional groups that include ethoxy (OEt), monoglyme monomethyl ether (OMEG), diglyme monomethyl ether (ODEG), and triglyme monomethyl ether (OTEG) creating four distinct COFs. We studied the amphidynamic behavior of the prepared COFs via PXRD, crystal modeling, and  $^{13}\text{C}$  solid state NMR relaxometry. The contrasting differences in  $T_1$  relaxation times highlight the amphidynamic behavior of the functionalized COFs.

University of Central Florida

Demetrius Vazquez-Molina    [vazquez-dimi@knights.ucf.edu](mailto:vazquez-dimi@knights.ucf.edu)

Giovanna Pope

James Harper

Fernando J. Uribe-Rmo