Abstract Submitted
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**Structural Characterization of Polymers of Intrinsic Microporosity Using X-ray Scattering Methods**[1] AMANDA MCDERMOTT, Penn State University, NHAMO CHAUKURA, CHRISTOPHER MASON, PETER BUDD, University of Manchester, KADUM MSAYIB, MARIOLINO CARTA, BADER GHANEM, NEIL MCKEOWN, Cardiff University, JAMES RUNT, Penn State University — Polymers of intrinsic microporosity (PIMs) are a novel class of materials with a large inner surface area and large free volume, which make them suitable for hydrogen adsorption. In addition, they exhibit a combination of high permeability and high selectivity useful for filtration applications. A series of polymers with high glass transition temperatures based on PIM-1, a polybenzodioxane with a ladder-type structure combining stiff segments with sites of contortion, as well as a series of triptycene-based network PIMs, are characterized via small-angle and wide-angle X-ray scattering. Scattering features, including multiple amorphous halos and a characteristic power-law slope, are related to polymer chemistry, hydrogen adsorption performance, and gas permeation parameters.

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