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Book of Abstracts

Gas Separation-Membranes (III)

Novel Polymers of Intrinsic Microporosity (PIMs) for gas separation membranes

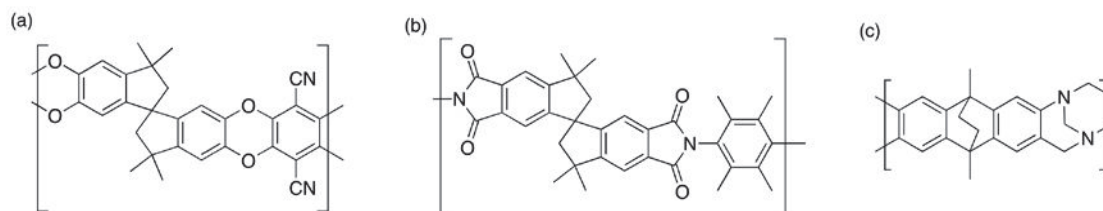
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Polymers of Intrinsic Microporosity (PIMs) combine the desirable processability of polymers with a significant degree of microporosity generated from the inefficient packing of their rigid and contorted macromolecular structures. They are attracting attention for a number of applications including the fabrication of optical sensors and as membrane materials for gas separations and organic solvent nanofiltration.¹ This talk will describe our latest work on synthesis of novel PIMs using efficient dibenzodioxin-based polymerisations, the method used for the synthesis of the archetypal PIM-1 (Fig. 1a), classic polyimide chemistry (Fig. 1b) or using a novel polymerisation reaction based on Tröger's base formation (Fig. 1c). In particular, we will focus on the design, synthesis and gas permeability of PIMs with exceptionally rigid polymeric structures. In addition to very high permeability, some of these polymers demonstrate improved gas selectivity due to their enhanced performance as molecular sieves.^{2, 3, 4}



References

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3. M. Carta, R. Malpass-Evans, M. Croad, J. C. Jansen, P. Bernardo, F. Bazzarelli and N. B. McKeown, *Science*, 2013, **339**, 303.
4. Y. Rogan *et al.* *Polymer Chemistry*, 2013, **4**, 3813.