

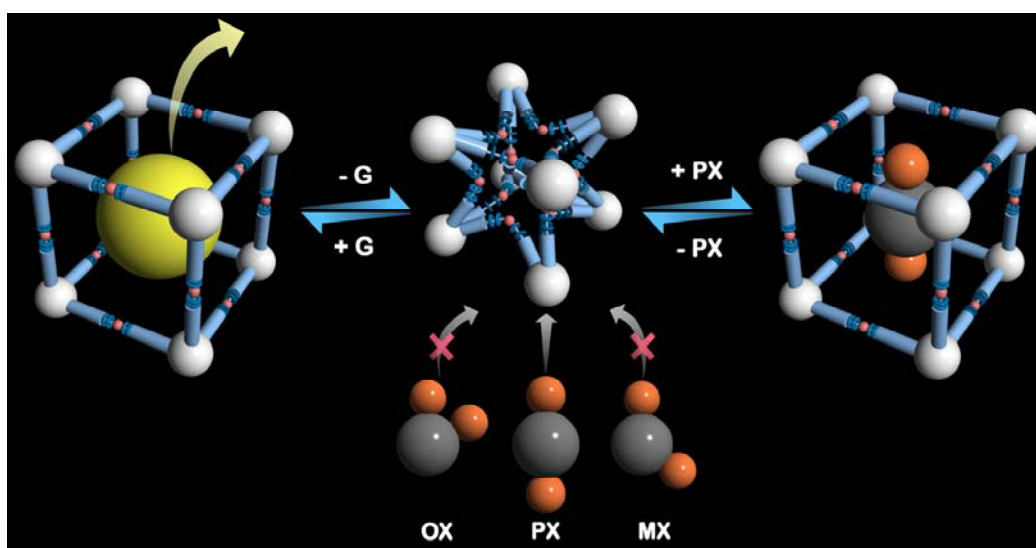
# Framework-Flexibility Driven Selective Sorption of *p*-Xylene over Other Isomers by a Dynamic Metal-Organic Framework

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## Abstract



### Schematic illustration: selective guest-responsive framework flexibility.

Chemical separation has great importance in industrial applications. Separation of xylene isomers still prevails to be one of the most important challenges in chemical industry, due to the large amount of commercial use of *p*-xylene in the production of beverage bottles, fibers and films. A novel Zn(II)-based dynamic coordination framework based on flexible ether-linkage exhibiting selective adsorption of *p*-Xylene over its congener C<sub>8</sub>-alkyl aromatic isomers at ambient conditions is reported. Notably, no dynamic structure based MOF compound is known in the literature which shows clear preference of *p*-xylene over other isomers. This type of framework-breathing and guest-induced reversible solid-state structural transformations with unique adsorption selectivity can be exploited purposefully to develop smart functional host materials capable of industrially important chemical separations.