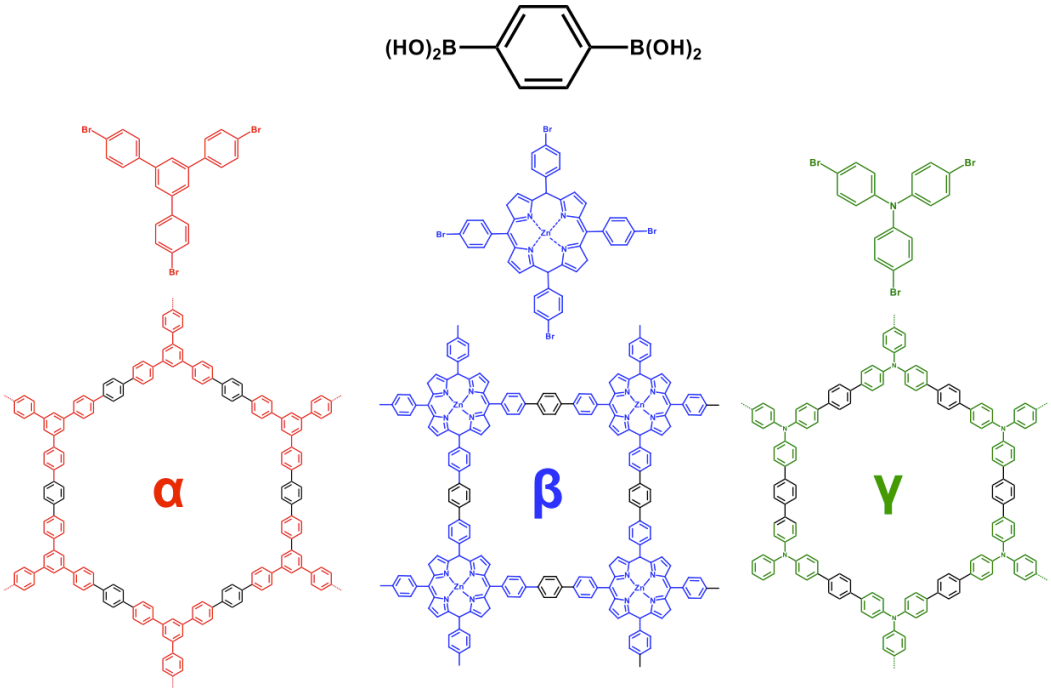
Porous aromatic polymers as heterogeneous catalysts

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The synthesis of porous, tunable materials with predictable properties is highly interesting, as it allows for targeted catalysis by custom-made materials. Metal-Organic Frameworks (MOFs) in particular have provided for a wealth of materials with predictable, and sometimes remarkable properties. The dipolar, and sometimes highly ionic nature of the dative bonds in MOFs does however limit application in catalysis, as lability of the bridging ligand leads to instability or other undesired effects. It is therefore interesting to look at similarly customizable materials that only contain covalent bonds. In this work, we'll present the synthesis of three new, Porous Aromatic Frameworks (PAFs)[1] (α, β and γ), obtained by Suzuki-Miyaura coupling of selected molecular modules.



Different Porous Organic polymers obtained via Suzuki-Miyaura condensation.

We demonstrate the pre- and post-synthetic tuneability of these materials through their decoration with catalytically active metal and acid moieties. We further investigate the use of cheap and highly porous Covalent Triazine Frameworks (CTFs)[2] in similar manner, as ligand and stabilizer for highly dispersed atomically dispersed metals. All obtained materials show good to excellent activity in targeted

reactions, namely acid catalysis and the production of H_2 from formic acid, along with excellent stability and recyclability.

References

(1) Dawson, R.; Cooper, A. I.; Adams, D. J. *Progress in Polymer Science* **2012**, *37*, 530.

(2) Kuhn, P.; Antonietti, M.; Thomas, A. *Angew Chem Int Edit* **2008**, *47*, 3450.