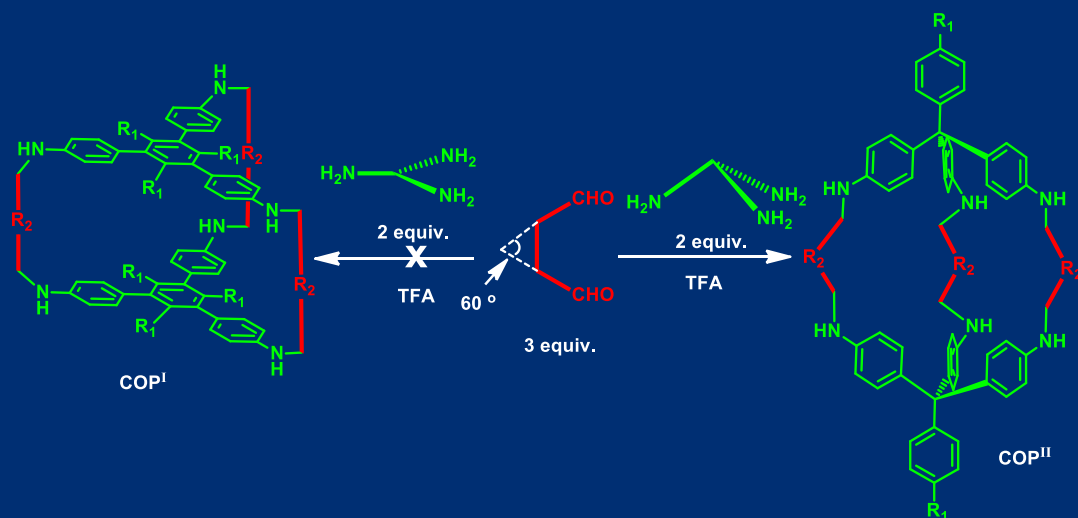
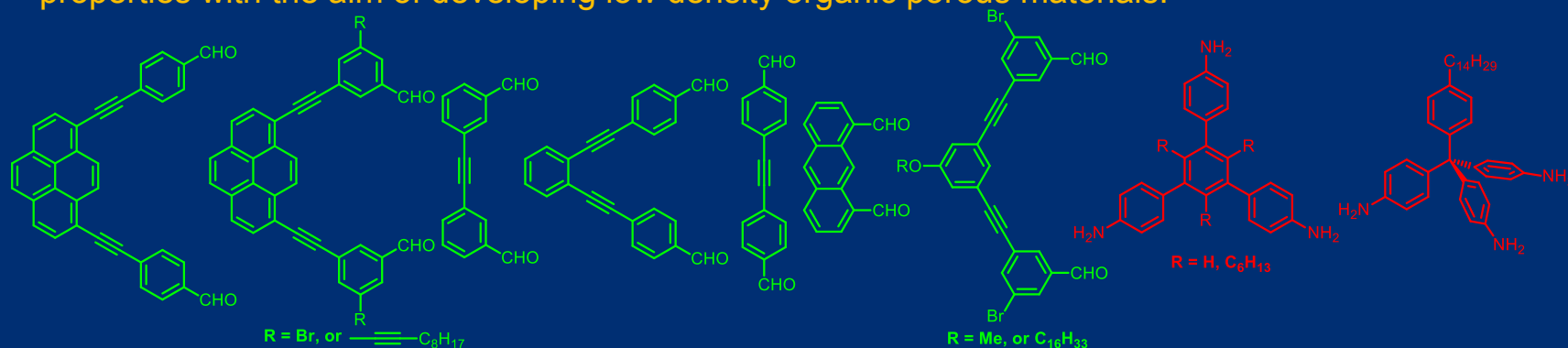


Construction of Shape-Persistent Covalent Organic Polyhedrons

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Covalent Organic Polyhedrons (COPs): Chemically and thermally robust covalent organic polyhedrons (COPs) have been prepared under dynamic conditions through imine metathesis. The critical structural parameters determining the success in COP formation was explored using various building blocks with different structural and geometrical features. We also studied their gas adsorption properties with the aim of developing low density organic porous materials.



We have found that both the angle and the directionality (e.g., two aldehyde groups locked in the same direction) of the functional groups as well as their solubility in the reaction medium are very important. The COPs showed excellent ideal adsorption selectivities of CO_2/N_2 up to 138/1. Our goal is to develop COP and their cross-linked framework materials with higher adsorption selectivity as well as capacity as organic porous materials for gas separation, especially for separation of CO_2/N_2 .