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(54) Title: METAL-DOPED COVALENT ORGANIC FRAMEWORKS

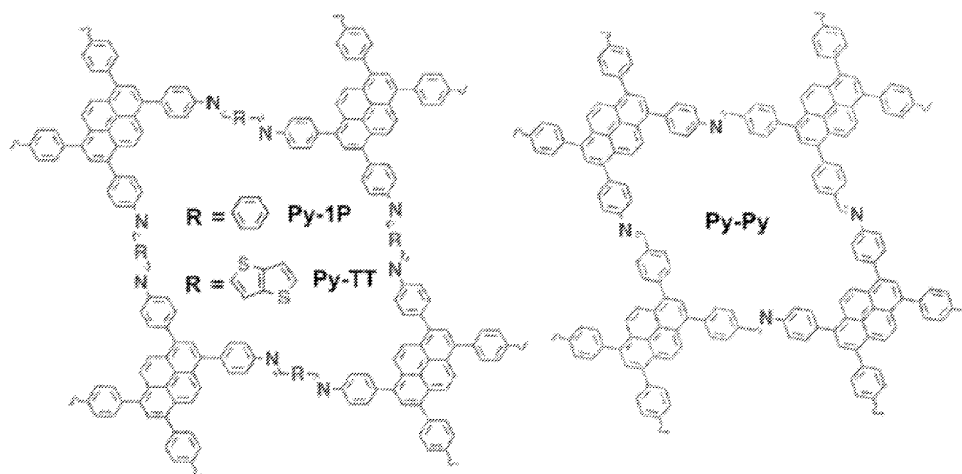


FIG. 2

(57) Abstract: Compositions are provided corresponding to covalent organic framework materials that are doped with selected metal ions. The selected metal ions can correspond to metal ions that can both a) form a bonding complex with functional groups in the COF material, and b) after forming the bonding complex with the functional group, can further form a modified sorption complex with the imine group and a sorbed component, such as a CO₂. As a result, the metal ion-doped organic framework materials can have unexpected sorption properties for sorption of components such as CO₂. The metal ions can be selected in part based on "hard soft acid base" theory. Methods of sorption of components from gas phase flows are also provided.

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