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(54) Title: TRIPTYCENE-BASED DIANHYDRIDES, POLYIMIDES, METHODS OF MAKING EACH, AND METHODS OF USE

(57) Abstract: A triptycene-based monomer, a method of making a triptycene-based monomer, a triptycene-based aromatic polyimide, a method of making a triptycene- based aromatic polyimide, methods of using triptycene-based aromatic polyimides, structures incorporating triptycene-based aromatic polyimides, and methods of gas separation are provided. Embodiments of the triptycene-based monomers and triptycene-based aromatic polyimides have high permeabilities and excellent selectivities. Embodiments of the triptycene-based aromatic polyimides have one or more of the following characteristics: intrinsic microporosity, good thermal stability, and enhanced solubility. In an exemplary embodiment, the triptycene-based aromatic polyimides are microporous and have a high BET surface area. In an exemplary embodiment, the triptycene-based aromatic polyimides can be used to form a gas separation membrane.

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