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## Synthesis of Stable Metal-containing Porous Organic Polymers for Gas Storage

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Electronic Supplementary Information (ESI) available: Materials, Characterization, Preparation of MPOPs, TGA curves of MPOPs, <sup>13</sup>C CP MAS NMR spectra of MPOPs materials, PSD curves of MPOPs, BET transform plots, t-plot curves of MPOPs, Selectivity of MPOPs, simulation of adsorption isosteric enthalpies.

**Abstract:** Stable metal-containing porous organic polymers were prepared by condensation reactions between 1,1'-ferrocenedicarboxaldehyde and meso-diamines to form the imine linkages. Gas adsorption test showed that the obtained polymers exhibited BET surface areas in the range of 715-1050 m<sup>2</sup>/g, with CO<sub>2</sub> adsorption capabilities of 14.8% at 273K/1bar. This approach represents a new and effective strategy for the preparation of stable metal-containing porous organic polymers.

**Keywords:** high BET surface areas; porous polymers; CO<sub>2</sub> capture

During the past decades, porous organic polymers (POPs) have generated enormous interest owing to their wide applications in the fields such as gas adsorption,<sup>1</sup> separation,<sup>2</sup> light harvesting,<sup>3</sup> and heterogeneous catalysis.<sup>4</sup> Among the most available POPs, nonmetal light elements such as C, H, O, N, B, constituted the skeletons of POPs<sup>5</sup>. On the other hand, POPs containing metal atoms were reported due to the special characters such as the catalytic activity<sup>6,7</sup>, and improved gas-adsorption performance.<sup>8</sup> By post metalation-treatment, POPs with coordinating

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