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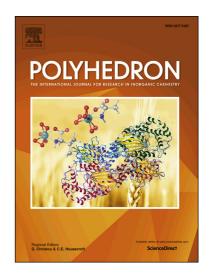
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Three coordination compounds based on

Tris(1-imidazolyl)benzene: Hydrothermal synthesis, crystal structure and adsorption performances towards organic dyes

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Abstract: Three coordination compounds, zero-dimensional Co(tib)(ADC)₂ (BUC-60), one-dimensional Zn₃(tib)₂Cl₆ (BUC-61) and three-dimensional [Cu₂(tib)₂(MoO₄)Cl]Cl (BUC-62), were obtained from the reaction of 1,3,5-tris(1-imidazolyl)benzene (tib), 1,3-adamantanedicarboxylic acid (H₂adc), phosphomolybdic acid hydrate (H₃PO₄· 12MoO₃) and the corresponding metal salts under hydrothermal conditions. The as-prepared samples were characterized by single-crystal X-ray diffraction, Fourier transform infrared spectroscopy, CHN elemental analyses, thermal gravity analyses and photoluminescence spectroscopy.

BUC-60 and BUC-61 exhibit good adsorption performances towards congo red (CR) and mordant blue 13 (MB13). The maximum adsorption capacities of BUC-60 and BUC-61 toward CR are 1949 and 1992 mg g⁻¹, respectively, along with those towards MB13 being 564 and 209 mg g⁻¹, respectively. In addition, BUC-60 can selectively capture anionic dyes molecules from a dye matrix.

Keywords: Coordination compound, 1,3,5-tris(1-imidazolyl)benzene, adsorption, organic dyes, separation

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