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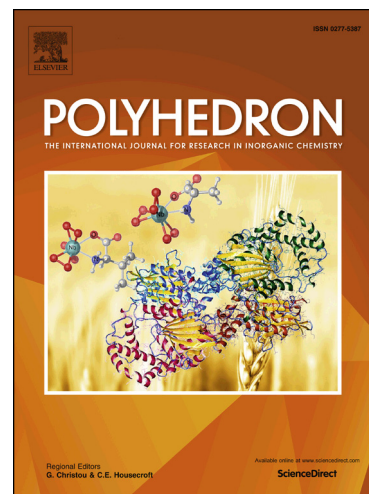
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# Highly efficient photocatalytic Cr(VI) reduction and organic pollutants degradation of two new bifunctional 2D Cd/Co-based MOFs

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## Abstract

Two new 2D metal-organic frameworks (MOFs),  $[\text{Cd}(\text{bpy})(\text{H}_2\text{O})\text{L}]_n$  (**BUC-66**) and  $\{\text{Co}(\text{bpy})(\text{H}_2\text{O})\text{L}\cdot\text{H}_2\text{O}\}_{2n}$  (**BUC-67**), ( $\text{H}_2\text{L} = \text{cis-1,3-dibenzyl-2-imidazolidone-4,5-dicarboxylic acid}$ ,  $\text{bpy} = 4,4'$ -bipyridine), have been synthesized under hydrothermal conditions. These two 2D MOFs were used to carry out photocatalytic Cr(VI) reduction and organic pollutants degradation. The results revealed that both **BUC-66** and **BUC-67** displayed outstanding photocatalytic Cr(VI) reduction performances with reduction efficiency more than 98% within 30 min under UV light irradiation, much better than that of commercial P25 (24%). Also, **BUC-66** and **BUC-67** could photocatalytically decompose organic dyes. These two MOFs exhibited considerable photocatalytic activities in the Cr(VI)/organic dyes matrix. Upon UV light illumination for 30 min, the Cr(VI) reduction efficiency reached 100%, along with the organic dye (methyl orange) degradation efficiency being 85% (**BUC-66**) and 100% (**BUC-67**). Finally, a possible photocatalytic reaction mechanism have been proposed and

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