

Excellent nerve agents degrading ability of MOF-808 at room temperature

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Despite being the most inhuman weapon, Chemical Warfare Agents (CWAs) has been used in conflict zones and by terrorist groups around the world due to mass kill capability and price-effectiveness, and many countries and groups are still stockpiling CWAs. If toxic CWAs are released to environment, the means of decontamination of the human body, important facilities and areas must be provided. We conducted a series of decontamination experiments for GD and VX by Zr-based reactive materials namely Zr(OH)₄, UiO-66, UiO-66-NH₂ and MOF-808 particles in neat condition and aqueous solution at room temperature. During the decomposition process, remaining GD, VX and the decomposition products were analyzed by GC-FID and GC/MS for determining reaction rates and routes of the decomposition. On the bases of the experiment results, we are going to discuss the excellent performance of MOF-808 on the decomposition reaction of GD and VX, the major nerve agents.