

# Chemical Engineering

September 12-14, 2016 Phoenix, USA

## Synthesis and characterization of a photoluminescent Zr-based metal-organic framework with controllable UV-induced structural variation and ultrahigh hydrostability

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**M**etal-organic framework (MOFs) have attracted intensive attention in the past two decades. The high surface area, organized pore structure, and tailorable chemistry have made MOFs a promising series of candidates in chemical related applications, like gas separation and storage. The exploration of MOFs with desirable properties as well as high stability emerged as a research focus. We present the synthesis and characterization of a photoluminescent Zr-based MOF (ZrPDA) with controllable UV-induced structural variation, which can be potentially used in gas capture and storage. The high valence state  $Zr^{4+}$  and smart molecule, 1,4-phenylenediacrylic acid ( $H_2PDA$ ), which can go through [2+2] cycloaddition reaction under UV irradiation, were employed to form the ZrPDA. The structural variation of ZrPDA under UV exposure and its hydrostability were studied.

### Biography

Bohan Shan is a PhD student studying in Arizona State University, School for Engineering of Matter, Transport & Energy. He is working on synthesis and characterization of hydrostable MOFs in Dr. Bin Mu's lab.

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