# Article information:

Optimized Separation of Acetylene from Carbon Dioxide and Ethylene in a Microporous Material | Journal of the American Chemical Society  
<https://pubs.acs.org/doi/10.1021/jacs.7b03850>

# Article summary:

1. This article discusses the potential of metal-organic frameworks (MOFs) and porous coordination polymers (PCPs) for gas separation, specifically for the challenging separation of acetylene (C2H2) from carbon dioxide (CO2) and ethylene (C2H4).

2. The authors discovered a novel SIFSIX-MOF, [Zn(dps)2(SiF6)] (dps = 4,4′-dipyridylsulfide; termed as UTSA-300), with multiple potential binding sites and a pore aperture size of about 3.3 Å.

3. UTSA-300a can have complete CO2 and C2H4 exclusion from the mixtures of C2H2/CO2 and C2H2/C2H4 under ambient conditions, which can serve as a superior porous adsorbent for the challenging separation of C2H2/CO2 and C2H2/C2H4.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

This article is generally reliable in its reporting on the potential of metal-organic frameworks (MOFs) and porous coordination polymers (PCPs) for gas separation, specifically for the challenging separation of acetylene (C2H2) from carbon dioxide (CO 2 ) and ethylene (C 2 H 4 ). The authors provide detailed information on their discovery of a novel SIFSIX-MOF, [Zn(dps) 2 (SiF 6 )] (dps = 4,4′-dipyridylsulfide; termed as UTSA-300), with multiple potential binding sites and a pore aperture size of about 3.3 Å. They also provide evidence to support their claim that UTSA-300a can have complete CO 2 and C 2 H 4 exclusion from the mixtures of C 2 H 2 /CO 2 and C 2 H 2 /C 2 H 4 under ambient conditions, which can serve as a superior porous adsorbent for the challenging separation of C 2 H 2 /CO 2 and C 2 H 2 /C 2 H 4 .

The article is well written with clear explanations throughout. It provides detailed information on the synthesis process used to create UTSA-300 as well as physical measurements taken to analyze it. The authors also provide evidence from direct crystallography results, molecular modeling studies, experimental breakthroughs, density functional theory calculations

# Topics for further research:

* Metal-Organic Frameworks (MOFs)
* Porous Coordination Polymers (PCPs)
* Gas Separation
* Acetylene (C2H2)
* Carbon Dioxide (CO2)
* Ethylene (C2H4)

# Report location:

<https://www.fullpicture.app/item/4b7260c5459d8260b31517ca4adf8b60>