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## Single-Crystal-to-Single-Crystal Transformations of Metal–Organic-Framework-Supported, Site-Isolated Trigonal-Planar Cu(I) Complexes with Labile Ligands

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Transition-metal complexes bearing labile ligands can be difficult to isolate and study in solution because of unwanted dinucleation or ligand substitution reactions. Metal–organic frameworks (MOFs) provide a unique matrix that allows site isolation and stabilization of well-defined transition-metal complexes that may be of importance as moieties for gas adsorption or catalysis.

Herein we report the development of an in situ anion metathesis strategy that facilitates the postsynthetic modification of Cu(I) complexes appended to a porous, crystalline MOF. By exchange of coordinated chloride for weakly coordinating anions in the presence of carbon monoxide (CO) or ethylene, a series of labile MOF-appended Cu(I) complexes featuring CO or ethylene ligands are prepared and structurally characterized using X-ray crystallography. These complexes have an uncommon trigonal planar geometry because of the absence of coordinating solvents. The porous host framework allows small and moderately sized molecules to access the isolated Cu(I) sites and displace the “place-holder” CO ligand, mirroring the ligand-exchange processes involved in Cu-centered catalysis.

### Level of Expertise

Early Career <5 Years

### Presenter Gender

Man

### Pronouns

He/Him

### Which facility did you use for your research

Australian Synchrotron

### Students Only - Are you interested in AINSE student funding

### Do you wish to take part in the Student Poster Slam

No

## **Condition of submission**

Yes

**Primary author(s)** : PERALTA, Ricardo (University of Adelaide)

**Co-author(s)** : SUMBY, Chris (University of Adelaide)

**Presenter(s)** : PERALTA, Ricardo (University of Adelaide)

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