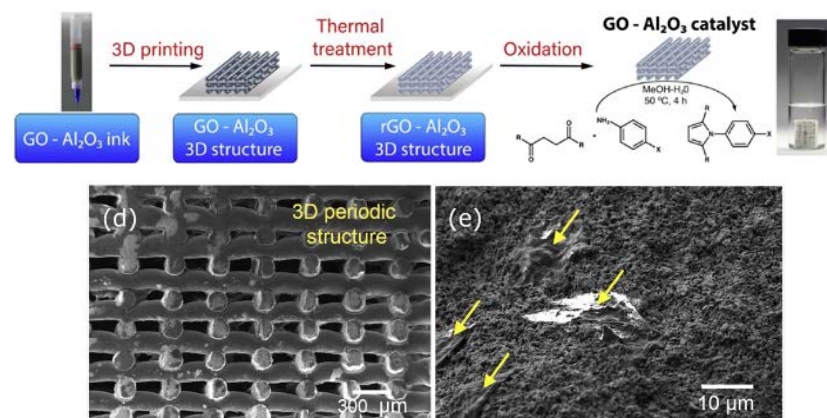
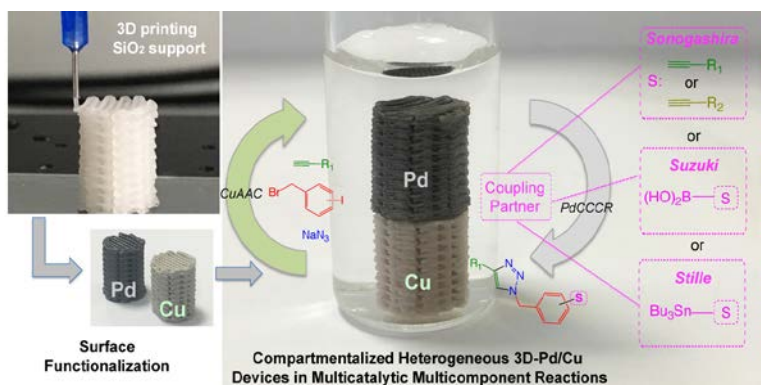


- ✓ Hybrid heterogeneous catalysts (Cu, Pd, Au, Pt) on 3D oxide supports (silica or alumina), with excellent catalytic activity in a wide range of metal catalyzed transformations
- ✓ 3D printed metal-free graphene oxide- Al_2O_3 ($\text{GO-Al}_2\text{O}_3$) catalytic system



- Synthesis of **APIs**, using either conventional or multicomponent approaches. **No leaching**: ICP of crude mixtures, hot filtration tests and poisoning tests performed.
- Validated in the optimization of novel multicatalytic transformations. **Reuse** of the catalyst in subsequent reaction cycles. Solution Phase Parallel Synthesis.
- **Surface modification** on the silica support: New, efficient, robust and easy reusable monolithic Pd- and Cu-based catalysts to perform Multicatalytic Multicomponent Reactions (MMCRs).

- Evaluation of the **catalytic performance**: i) Paal-Knorr synthesis of diversely substituted pyrroles, and ii) Biomimetic-inspired assembly of benzimidazoles.
- It combines the catalytic performance and **reaction scope** of graphene oxide with chemical **stability** and **recyclability** of the ceramic support.
- **Recycled** in new reactions without significant yield loss.