Review of: "Visible light-driven efficient palladium catalyst turnover in oxidative transformations within confined frameworks"

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I thought this work provides a promising method for the development of advanced heterogeneous Pd-catalyzed oxidations reactions. Palladium-catalyzed aerobic oxidations are of vital importance for the industrial application. However, in homogeneous systems, the oxidation problem that the fast aggregation of Pd^0 to Pd black compared to the slow regeneration of Pd^{II} active specie through the oxidation of Pd^0 by O_2, as well as the catalysis problems (such as high catalyst loading, ancillary ligand, excess electron transfer mediators, separation difficulty, and so on) are ubiquitous, which largely deviates the criterion of green chemistry. This work reported by Jiang et al. propose a novel strategy to rationally regulate the competitive processes of Pd^0 aggregation and reoxidation in Pd-catalyzed oxidative transformation, which remarkably overwhelmed the state-of-the-art approaches. Through the judicious fabrication of spatially proximate Ir^{III} photocatalyst and Pd^{II} catalyst into metal-organic framework (MOF), the as-synthesized MOF catalysts showed outstanding catalytic performances in three representative Pd-catalyzed oxidation reactions. The MOF catalysts also serve as a promising platform to reveal the stepwise electron transfer process between Pd, photocatalyst and O_2, which further gives insight into the elucidation of the Pd reoxidation pathway. This is a very informative and useful article and congratulate to all the authors.

In the future, it would be interesting to see the authors show some challenging Pd-catalyzed oxidation transformations under MOF-based catalytic systems – perhaps they have already.