Postsynthetic modification of coordination networks

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The postsynthetic modification (PSM) of coordination networks was initially reported over a decade ago independently by Stephen Lee (Cornell U., U.S.A.) and Kimoon Kim (POSTECH, Korea). PSM involves the chemical modification of a coordination network in a heterogeneous fashion on the already-formed solid network by an external reagent that is present in the solution or gas phase. Retention of structure and crystallinity with respect to the original material is an essential feature of most useful PSM reactions. Since those first reports, and particularly in the last past five years, PSM has grown into an important tool for the manipulation of coordination network materials, and for the preparation of frameworks containing functionalised pores. While the archetypical PSM reaction involves an organic transformation involving functional groups or 'tags' on the linkers, the PSM strategy is not limited to this and can involve transformation of the 'inorganic' parts of the network or other framework changes. In addition, chemical, photolytic, or thermal treatment can lead to postsynthetic deprotection reactions, and the unmasking of reactive functional groups that would have been likely to interfere with the coordination network synthesis.

This first *CrystEngComm* Collection brings together a series of papers concerning recent developments in the postsynthetic modification of coordination networks, demonstrating the health and continuing development of this area. The majority of the papers involve new PSM reactions, further extending the utility of this approach. There are also unprecedented examples of reactions between functionalities anchored to different linkers, and examples of modification of the secondary-building units.

We would like to thank all the authors who contributed articles to this Collection. As guest editors, we feel that these exciting contributions bear witness to the current scope of postsynthetic modification, and provide some insight into the directions in which the area is heading. From the studies described here, it is clear that PSM will continue to grow and be an essential tool for the development of functionalised coordination networks, particularly as such materials become utilised in various technologies. We hope that the readers find the Collection both interesting and stimulating.