

Strategic synthesis and functionalization of corroles for sensing applications

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ABSTRACT

In the last 15 years corroles have assumed an important role in the porphyrinoid chemistry. Although the first synthesis of corrole dates back to 1965, mainly from 1999 efficient and suitable synthetic protocols leading to *meso*-substituted corroles became available, starting a new and exciting era in this field. At the first sight corroles show a lot of similarities with porphyrins but, their distinctive structural, spectroscopic, photophysical properties, coordination chemistry as well as some peculiar chemical reactivities places these macrocycle in a distinctive position between the members of the porphyrinoid family¹⁻³. Here we shows that the chemistry of corroles is mature enough to consider them as an excellent material for chemical sensors. In particular in the gas phase the broad selectivity of corroles is strongly dependent on molecular features such as the nature of metal ion complexed into the aromatic macrocycle, or the peripheral substituents. The chemical versatility of corroles plays a fundamental role to fine tune their ability in binding small molecules with different affinity, and their incorporation in technological devices as selective sensors, or sensor arrays able to emulate the olfaction, can be now a reality.

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