Cover Picture

Georg Süss-Fink, Matthieu Faure, and Thomas R. Ward

The cover picture shows a representation of supramolecular cluster catalysis, which is commonly regarded as a field lying at the interface of homogeneous and heterogenous catalysis. Homogeneous catalysis is epitomized by Halpern's elucidation of the molecular details of the enantioselective hydrogenation of prochiral alkenes (top flask) catalyzed by a rhodium diphosphane complex. The three-way catalyst is the emblem of heterogeneous catalysis (left flask). The central structure depicts a cluster capable of hydrogenating aromatic substrates under mild biphasic conditions. Most interestingly, the mechanism relies solely on hydrophobic interactions between the catalyst and the substrate. Such weak contacts are reminiscent of enzymatic catalysis as exemplified by triterpene cyclases, which convert squalenes into steroid precursors (right flask). The system described thus lies at the interface of enzymatic, homogeneous, and heterogeneous catalysis. Further details are reported by Süss-Fink et al. on p. 99 ff.