The ever-expanding mechanistic landscape of (de)hydrogenation, hydrogen transfer and borrowing hydrogen transformations

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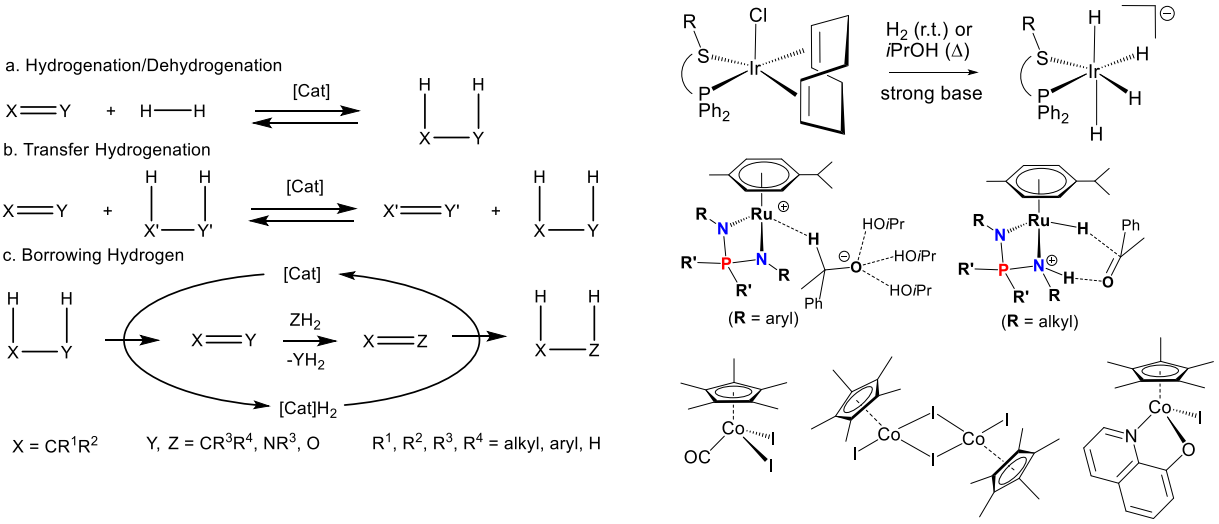
The shuttling of H atoms to and from a substrate in (de)hydrogenation, hydrogen transfer and "borrowing hydrogen" transformations (Scheme) are mechanistically related. The mechanistic landscape is very rich, the various possible pathways involving either a change or the invariance of the metal formal oxidation state, inner-sphere or outer-sphere substrate activation, homolytic or ionic dihydrogen activation, the involvement of internal or external protons, *etc.* This presentation will highlight additional unprecedented mechanistic features, exemplified by transformations catalyzed by Ir,[1] Ru[2] and Co[3] systems that have recently been investigated in my group.



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