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# Reactivity of Metal Complexes with Redox-Active Ligands

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## Message from the Guest Editor

Redox-active ligands are capable of being in several stable oxidation states, between which reversible redox changes are possible. The classical redox-active ligands include α-diimines, dithiolenes, and o-quinones. A unique property of these ligands lies in their ability to reversibly transform into radical anion or dianionic forms while maintaining a bond with a metal atom. Acenaphthene-1,2-diimine (bian) ligands are of particular note, as they are capable of accepting up to four electrons due to the reduction of both diimine and naphthalene components.

Transition metal complexes in combination with redox-active ligands are often used to stimulate redox-based catalytic reactions and to activate small molecules. For non-transition metals, unlike transition metals, a change in the oxidation state is not characteristic. However, the combination of non-transition metals and a redox-active ligand induces oxidative addition and reductive elimination reactions. This property makes such complexes similar to catalytically active compounds of transition metals and opens up the possibility of their use in catalysis.

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