electron-transfer catalysis

The term indicates a sequence of reactions such as shown in equations (1)–(3), leading from A to B:

$$A + e^{-} \rightarrow A^{\cdot -} \quad (1)$$

$$A^{\cdot -} \rightarrow B^{\cdot -} \quad (2)$$

$$B^{\cdot -} + A \rightarrow B + A^{\cdot -} \quad (3)$$

An analogous sequence involving radical cations ($A^{\cdot +}$, $B^{\cdot +}$) is also observed.

The most notable example of electron-transfer catalysis is the $S_{RN}1$ (or T + D_N + A_N) reaction of aromatic halides.

The term has its origin in a suggested analogy to acid-base catalysis, with the electron instead of the proton. However, there is a difference between the two catalytic mechanisms, since the electron is not a true catalyst, but rather behaves as the initiator of a *chain reaction*. 'Electron-transfer induced chain reaction' is a more appropriate term for the situation described by equations (1)–(3).

1994, *66*, 1110