A distance required by Hush theory is the effective donor-acceptor separation distance ($d$), assumed to be related to dipole moment expectation values by $r = |\mu_1 - \mu_2|/n$, where $\mu_1$ and $\mu_2$ are the dipole moments of the localised initial and final states in a mixed-valence system, respectively, and where $e$ is the electronic charge and $n$ is the number of electrons in the system. On the other hand, $R$ in Equation (viii) derived by the superexchange mechanism may be defined in terms of the actual bond lengths for the through-bond sequence pertinent to the pathway being modelled (20c). The Ru-Ru separation ($d(M\text{-}M)$) approximately reflects the length of the bridge in the present systems. In Class II binuclear metal complexes, when the metal-metal coupling is not very strong (probably $K < 10^5$), the metal-metal separation is usually used instead of the dipole moment length (24).

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Rapid Synthesis of Colloidal Clusters
Scientists from PCLCC, Institute of Chemistry, Chinese Academy of Sciences, Beijing, China, have synthesised uniform and stable polymer-stabilised colloidal clusters of platinum, iridium, rhodium, palladium, ruthenium and gold by microwave irradiation (W. Tu and H. Liu, J. Mater. Chem., 2000, 10, (9), 2207–2211). As microwave heating has uniform and fast heating characteristics only a short irradiation time was needed. The colloidal clusters formed have small average diameters and narrow size distributions. Stable colloidal ruthenium clusters without boron were prepared using ethylene glycol as the reductant.