Excess electrons bound to atom and molecule clusters

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Ammonia molecules cannot bind an excess electron, but may team up to form a cluster that can. Still the binding energy is small, and the distribution of the excess electron dwarfs the cluster. (Iso-surfaces enclosing 10% (orange) and 80% (gray) are shown.

NaCl clusters have very polar bonds, but form nevertheless unpolar clusters that are barely able to bind an excess electron. The inner iso-surface (yellow mesh) shows that only a few percent of the density are localized close to the Na\(^+\) ions.

Aluminum cluster anions show pronounced configuration mixing due to several quasi-degenerate orbitals in the HOMO/LUMO region making interpretation of photoelectron spectra a tough challenge.