

## IMPACT OF LANTHANIDE IDENTITY ON PHOTOELECTRON-VALENCE ELECTRON INTERACTIONS

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With recent interest in quantum simulations as well as technologies such as spintronics and magnetic materials, the importance of electron correlation has been ever increasing. Lanthanide oxides, with their close lying electronic states stemming from the presence of 4f electrons, have been of immense interest in recent years as a result. Developing the breadth of knowledge of these materials is necessary and can help reveal the patterns in the impact of lanthanide identity on the electron correlation. Previous studies conducting anion photoelectron spectroscopy on small lanthanide oxide clusters have indicated strong interactions between departing photoelectron and valence electrons of the neutral cluster, shown by an increase in excited state band intensity with a decrease in photon energy, opposite of that predicted by the threshold law. To better understand this relationship between the electron correlation and the interactions between the photoelectron and the neutral core and its change with lanthanide identity, the anion photoelectron spectra of  $\text{Ce}_3\text{O}$ ,  $\text{Sm}_3\text{O}$ , and  $\text{Gd}_3\text{O}$  were collected at 2.330 eV and 3.495 eV.