THE INSULATOR TO METAL TRANSITION IN DIVALENT METAL CLUSTERS: A NEGATIVE ION PHOTOELECTRON SPECTROSCOPY STUDY

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Negative ion photoelectron spectroscopy of size selected $Mg_{n=3-35}^-$ and $Zn_{n=3-20}^-$ was used to investigate the electronic structure evolution of magnesium Mg_n and zinc Zn_n clusters. In general, the 3s and 3p-derived bands were observed to merge with increasing cluster size, but local maxima for the 3s to 3p-derived band separation exist for Mg_{10}^-, Mg_{20}^-, Mg_{34}^-, Zn_{10}^-, and Zn_{20}^-. This is consistent with a shell model interpretation of electronic structure.