Isolated Transition Metal Clusters: Formation and Cold Ion Trap Investigation for their magnetic properties

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In order to determine the spin and orbit contributions to the magnetic moments of size selected transition metal clusters in the gas phase, we have defined a Penning cryo trap based experimental scheme in conjunction with a laser vaporization cluster ion source and with X-ray induced Magnetic Circular Dichroism (XMCD) measurements\textsuperscript{[1]}. These measurements utilize brilliant, tunable and circularly polarized x-ray radiation as available at the BESSY II synchrotron facility.

We have recorded data of size selected cationic cobalt\textsuperscript{[2]}, iron and nickel clusters ($7 \leq n \leq 17$). We compare our results to spin- and orbit data of atoms and of the bulk, and to the total magnetic moments of clusters investigated by Stern-Gerlach experiments.

References