

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Electric deflection studies of rhodium clusters¹ MARK KNICKELBEIN, Argonne National Laboratory, MARTIN BEYER, Technische Universität Berlin — The electric susceptibilities of rhodium clusters (Rh_n , $n=5-32$) have been studied via a DC molecular beam deflection technique. It is observed that all clusters are high-field seekers, indicating that the induced dipole moments are larger than any small permanent dipole moments that may be present. The per atom polarizabilities determined from the beam deflections exceed the classical value. Rh_7 and Rh_{10} exhibit per-atom polarizabilities that are both anomalously large and temperature dependent. Peak broadening is most pronounced for Rh_7 , indicating the presence of a small permanent dipole moment. It is proposed that the anomalous polarizabilities exhibited by Rh_7 and Rh_{10} are a consequence of their being dynamic Jahn-Teller molecules.

¹This work is supported by the US Department of Energy, Office of Basic Energy Sciences, Division of Chemical Sciences, under Contract W-31-109-ENG-38 and by the CREST program of the Japan Science and Technology Agency (JST).

Mark Knickelbein
Argonne National Laboratory

Date submitted: 05 Dec 2005

Electronic form version 1.4