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**Microscopic investigation on the static polarizability of nanocluster composed of chains of atoms**[1] ZACHARY BOND, HYE-YOUNG KIM, Department of Chemistry and Physics, Southeastern Louisiana University, Hammond, LA 70402, MILTON COLE, Department of Physics, Pennsylvania State University, University Park, PA 16802, DARRELL VELEGOL, Department of Chemical Engineering, Pennsylvania State University, University Park, PA 16802 — The dispersion interaction between nanoclusters at very large separation may be calculated by considering each cluster as a point particle characterized by a static polarizability tensor. The static polarizability of a cluster is evaluated by including all many-body interactions self-consistently. In the present study, various numbers of chains of atoms, composed of identical or two different atoms at alternating sites along each chain, are chosen as cluster. The results of the present calculation show the effects of anisotropic shape (aspect ratio), finite size, and substance. The dependence on the separation between nearby chains within a cluster is also explored. The static polarizability depends also on material, diverging when a coupling constant $\nu$ reaches a limiting value $\nu_{max}$, where the coupling constant $\nu$ is defined as the atomic polarizability per unit volume. We will present microscopic (atomic) views on how the static polarizability of a cluster varies over a wide range of $\nu$ values.

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