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**Modification on the melting of aluminum nanoclusters by a copper atom: heat capacities of $CuAl_{n-1}^-$ nanoalloys**[1] BAOPENG CAO, COLLEEN M. NEAL, ANNE M. STARACE, MARTIN F. JARROLD, Department of Chemistry, Indiana University, 800 E Kirkwood Ave., Bloomington, IN 47405 — The melting of alloyclusters is currently of great interest and emerging as an important research area. In this talk, we report the synthesis and melting transition of $CuAl_{n-1}^-$ nanoalloy clusters (n = 49 – 62). Heat capacities and melting behaviors have been determined for $CuAl_{n-1}^-$ nanoalloy clusters using a novel collision induced dissociation method and are compared with those of pure aluminum cluster $Al_n^+$. All these nanoalloys present a first order melting transition at temperatures well-below the melting temperature of the bulk aluminum and the eutectic temperature of their bulk alloys. No eutectic characteristic is detected for these nanoalloyclusters. Upon substitution of Al with a single copper atom, the melting of pure aluminum clusters has been altered considerably. Size and charge effects of the doping atom on the melting of host nanoclusters are discussed.

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