GROWING OF METAL-MOLECULE CLUSTERS IN HELIUM DROPLETS

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The utility of a continuous beam of helium droplets for assembly of composite metal - molecular clusters is studied. Clusters of silver having up to about 10^4 atoms and molecules such as methane, ethane, ethylene and acetylene with up to 10^4 were obtained via sequential pickup of molecules by He droplets with average sizes in the range of 10^5 to 10^7 atoms. The IR spectra of the formed clusters showed a splitting of the C-H band, which we ascribed to molecules in the first layer in immediate contact with the surface of the metal clusters and to molecules in subsequent layers. Applications of this technique to a broader range of metal-molecule composites and surface deposition of formed clusters are discussed.