AU Diaz-Tendero, S, Sanchez, G, Alcami, M, Martin, F, Hervieux, PA, Chabot, M, Martinet, G, Desesquelles, P, Mezdari, F, Wohrer-Beroff, K, Della Negra, S, Hamrita, H, Le Padellec, A, Montagnon, L
TI Fragmentation of small neutral carbon clusters
SO INTERNATIONAL JOURNAL OF MASS SPECTROMETRY
LA English
DT Article
DE stability and fragmentation of clusters; carbon clusters; statistical model of fragmentation
ID DISSOCIATION-ENERGIES; ATOMIC CLUSTERS; METAL-CLUSTERS; EXACT EXCHANGE; IONS; PHOTODISSOCIATION; DENSITY; ENERGETICS; PHASE; PHOTOFRAGMENTATION
AB We report on theoretical and experimental efforts designed to understand the fragmentation of small neutral carbon clusters. Theoretically, the dissociation dynamics of C, has been investigated using a statistical model based on the microcanonical Metropolis Monte Carlo method. In this model various structural quantities (geometries, dissociation energies, harmonic frequencies...) are required for both the parent cluster and the fragments. They have been obtained from quantum chemistry calculations for Q, up to n = 9. Experimentally, a new detection system for high velocity fragments has been recently developed allowing the fragmentation of high velocity clusters to be totally recorded. Results for the branching ratios of deexcitation of C-n with 5 <= n <= 9 formed by electron capture in high velocity C-n(+)-He collisions are presented. In all cases, the agreement between theory and experiment is reasonably good provided that the theoretical branching ratios are convoluted with a C, energy distribution centered at around 10 eV 
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NR 34
TC 0
PU ELSEVIER SCIENCE BV
PI AMSTERDAM
PA PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS
SN 1387-3806
J9 INT J MASS SPECTROM
JI Int. J. Mass Spectrom.
PD MAY 15
PY 2006
VL 252
IS 2
BP 126
EP 132
PG 7
SC Physics, Atomic, Molecular & Chemical; Spectroscopy
GA 045UV
UT ISI:000237768900007