

## FT-ICR Study of Chemical Reaction of Precursor Clusters of SWNT

Masamichi Kohno, Shuhei Inoue and Shigeo Maruyama

Chemical reaction of carbon clusters and metal-carbon binary clusters ( $MC_n$ ,  $M = Ni$  or  $Co$ ) with nitric oxide was studied by the FT-ICR (Fourier Transform Ion Cyclotron Resonance) mass spectrometer. Clusters were generated by a pulsed laser vaporization of a Ni/Co-carbon composite disk by supersonic-expansion cluster beam source directly connected to the FT-ICR mass spectrometer. Very small amount of  $NiC_n^-$  clusters were observed in the mass spectrum and were revealed to be much more reactive to NO compared with pure carbon clusters. It was speculated that  $MC_n$  had open caged structure where a metal atom preferentially attached to the open sites. Besides the gas-phase cluster generation, the macroscopic generation of SWNTs by pulsed laser vaporization of the same sample material in a furnace was also performed. In order to study the possible precursor clusters, the soot in a furnace are being studied by the FT-ICR mass-spectrometer.