

포스터 B-2

TEM Analysis of Graphitic Spherulite Grown in Liquid Nickel under High Pressure

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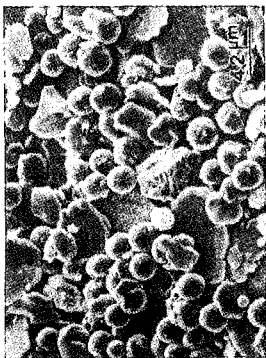
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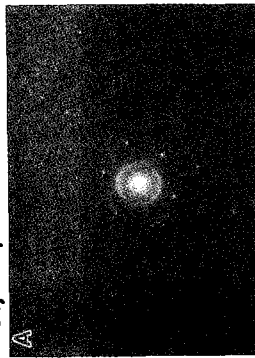
The graphitic spherulites grown in liquid nickel matrix under high pressure were examined microscopically by transmission electron microscope. They were formed in the diamond-stable region simultaneously with diamond particles and grew continuously. It was confirmed that the graphitic spherulite began to grow from the surface of nickel carbide only stable under high pressure and kept growing spirally with many defects like onion. There were no segments(grains) with grain boundaries in the spherulite. High resolution TEM image shows that carbon atom planes in the graphitic spherulite run straightly and parallelly and bend abruptly at an angle of 150 degree. This microscopic feature of graphitic spherulite grown under high pressure is very similar to that of giant fullerene, predicted by Kroto and observed by lijima. The sp^3 -hybridized carbon atoms abundant in diamond-stable region played an important role to make the parallel graphitic plane bend and to grow fullerene-type graphitic spherulite continuously up to about 30 μm in diameter.

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RESULTS OF TEM OBSERVATION OF GRAPHITIC SPHERULITE



object spherulites



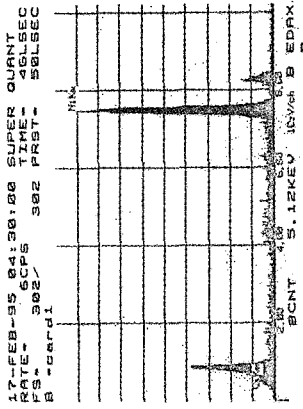
SAD pattern of growth center



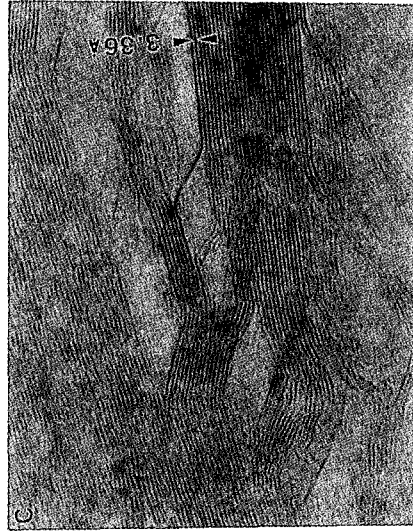
DF image of growth region



general TEM image of a spherulite



EDAX spectrum of growth center



HRTEM image of growth region