P/T Boundary and C_{60} Fullerenes - A Materials Science Perspective -

*Hisanori Shinohara[1], Ayano Nakagawa[1], Yukio Isozaki[2]

1. Nagoya University, 2. University of Tokyo

The P/T boundary is a cutting-edge topic not only in earth science but in nanoscience and materials science, ever since "C_{60} fullerene" was discovered in P/T boundary sections in the Inuyama area, central Japan in 1999. Since the formation of C_{60} fullerene molecules could only be achieved under somewhat restricted conditions such as imperfect combustion of unsaturated hydrocarbons, the founding of C_{60} molecules in any geological sections suggests the occurence, for exapmpe, of an anoxia triggered by wildfires. In fact, at the time of the C_{60} discovery in the Inuyama's P/T sections, we hypothsized that the C_{60} molecules were likely synthesized within locally anoxic zone in the extensive wildfires on the supercontinent Pangea and deposited on an anoxic deep-sea floor of the superocean Panthalassa.

Here, we report the discovery of C_{60} fullerene in Ubara P/T boundary sections in Hyogo Prefecture. Surprisingly, the amount of C_{60} found in these sections is more than two orders of magnitude larger than those found in the Inuyama P/T boundary. The presence of such a huge amount of C_{60} fullerene in the Ubara P/T boundary could not reasonably be explaied only by the extensive wildfires.

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