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Half-life measurement of ^{7}Be in materials TSUTOMU OHTSUKI, Research Reactor Institute, Kyoto University — The formation of atom-doped C60 and C70 etc. has been investigated by using several types of radionuclides produced by nuclear reactions. From the trace of the radioactivities after high performance liquid chromatography (HPLC), it was found that formation of endohedral fullerenes of Be atom is possible by a recoil process following the nuclear reaction. The decay rate of ^{7}Be electron capture (EC) was measured in C70 and Be metal with a reference method. The half-lives of ^{7}Be endohedral C70 and ^{7}Be in Be metal (Be metal(^{7}Be)) were found to be 52.45pm0.04 and 53.25pm0.04 days, respectively. This amounts to a 1.5 percent difference in the EC-decay half-life between ^{7}BeC70 and Be metal(^{7}Be). The results are a reflection of the different electron wave-functions in nuclear site for ^{7}Be inside C70 compared to when ^{7}Be is in a Be metal. The further theoretical interpretation is needed for these experimental results.

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