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## **Carbon nano-tube toxicity: *In-situ* imaging method using peapods to evaluate the bio-kinetics of carbon nano-tubes**

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The bio-safety of carbon nano-tubes (CNTs) is a concern, and CNT bio-kinetics is a key bio-safety issue. CNTs labeled with carbon isotopes, functionalized with moieties, or coated with colloidal metal particles have been used to monitor CNT bio-kinetics, though major technical issues (such as isotope preparation and handling or change in CNT surface properties) remain. The present report aims at establishing an advanced and simple *in-situ* imaging method of CNTs monitoring *in vivo* involving the use of CNTs filled with heavy metal particles (peapods). Gd-peapods containing GdCl<sub>3</sub> were synthesized using double-walled CNTs. The limits of Gd-peapods detection on MRI in solutions and agarose gel cubes were 1.3µg/ml and 4µg/ml, respectively. The peapods in rats was easily visualized by MRI and the change in signal intensity was dose-dependent. This newly developed method can be used to monitor CNT bio-kinetics *in vivo* without tedious tissue preparation.

### **Biography**

Naoto Saito is a Professor and Director of the Institute for Biomedical Sciences, Shinshu University. He is an experienced researcher specializing in biochemistry, cell biology, regenerative medicine, biomaterials and nano-biotechnology. As the leader of Shinshu University's Nano-biotechnology and Biomedical Engineering Team, he is working on developing CNT-based biomaterials.

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