

Abstract Submitted
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Synthesis of indium-containing nanoparticles using plasmas in water to study their effects on living body TAKAAKI AMANO, KAZUNORI KOGA, THAPANUT SARINONT, HYUNWOONG SEO, NAHO ITAGAKI, MASAHARU SHIRATANI, Graduate School of Information Science and Electrical Engineering, Kyushu University, SATOSHI KITAZAKI, Graduate School of Electrical Engineering, Fukuoka Institute of Technology, MIYUKI HIRATA, YOSHIMICHI NAKATSU, AKIYO TANAKA, Faculty of Medical Sciences, Kyushu University — Nanoparticles can be employed for biomedical applications such as biomarkers, drug delivery systems, and cancer therapies. They are, however, pointed out their adverse effects on human body. Here, we synthesized indium-containing nanoparticles using discharge plasmas with indium electrodes immersed in DI water and administrated nanoparticles to rats to analyze their kinetics in living body. The discharge power was 5.1 W. The electron density is $5 \times 10^{17} / \text{cm}^3$ deduced from Stark broadening of hydrogen lines. TEM observation shows the mean size of primary nanoparticles is 7 nm. The nanoparticles are indium crystalline and indium hydroxide crystalline. The synthesized nanoparticles and purchased nanoparticles (In_2O_3 , $<100\text{nm}$) were administrated to rats using subcutaneous injection. Indium of 166.7 g/day (synthesized) and of 27.8 g/day (purchased) are detected from the urine at 12 weeks after the administration. Synthesized nanoparticles dispersed in water are useful for analyzing kinetics of nanoparticles in living body. Work partly supported by KAKENHI.

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