Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Drug-loaded single-wall carbon nanohorns: adsorption and release of dexamethasone in vitro TATSUYA MURAKAMI, KUMIKO AJIMA, JIN MIYAWAKI, MASAKO YUDASAKA, SUMIO IIJIMA, KIYOTAKA SHIBA, CANCER INSTITUTE COLLABORATION, SORST-JST C/O NEC COLLABORATION, NEC COLLABORATION, MEIJO UNIV. COLLABORATION, CREST-JST C/O CANCER INSTITUTE COLLABORATION — Oxidized single-wall carbon nanohorns (SWNHox) are spherical aggregates (80-100 nm) of elongated graphitic tubes and have holes of <2 nm on the surface that enable incorporation of small guest molecules into them. Here we evaluate the *in vitro* capacity of SWNHox to adsorb and release an anti-inflammatory drug, dexamethasone (DEX). The total amount of DEX adsorbed to SWNHox was determined to be 200 mg/g using [^{3}H]-labeled DEX. Kinetic analysis showed DEX slowly released from the complexes into PBS: about a half of DEX adsorbed was released in two weeks. Experiments with mammalian cells indicated that functional DEX was released from the complex. The results obtained here showed that SWNHox is an attractive candidate for a controlled drug carrier.

Tatsuya Murakami

Date submitted: 01 Dec 2004 Electronic form version 1.4