

# **CAMT Seminar**

## **“Plasma polymers for improved cell proliferation and adhesion”**

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Location: Main Conference Room (1st floor), Bldg. A12

Center for Atomic and Molecular Technologies (CAMT)

(A12 棟 1 階会議室)

### **Abstract**

Two types of plasma polymers, with amine and carboxyl functional groups, were prepared by plasma enhanced chemical vapor deposition and tested for the cell adhesion and proliferation. Amine plasma polymers were deposited in cyclopropylamine/Ar low pressure radio frequency (13.56 MHz) discharges whereas carboxyl plasma polymers were deposited from mixture of maleic anhydride vapors and acetylene in dielectric barrier discharge at atmospheric pressure. Cultivation experiments were carried out with mouse myoblast cell line C2C12. The results showed that the amine film deposited at high power increased the cell proliferation whereas the films deposited at low power (having higher amount of amine groups but lower water stability) tended to inhibit it. The enrichment of cultivation surface with NH<sub>x</sub>-groups highly increased the adherence of cells. Increased cell adhesion was further investigated by single cell force spectroscopy using CellHesion 200. Amine and carboxyl plasma polymers were also deposited on polycaprolactone (PCL) nanofibers prepared by electrospinning. The structure of nanofibrous foils is believed to be advantageous for tissue engineering because of the structure similar to extracellular matrix. The PCL nanofibers coated by plasma polymers with optimized conditions increased the cell proliferation compared to uncoated nanofibers.

**(Host: Satoshi Hamaguchi Ext:7913)**