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Biosensor Consists of Na – Doped Hydroxyapatite Thin Film HIROAKI NISHIKAWA, MASANONU KUSUNOKI, SHIGEKI HONTSU, B.O.S.T, Kinki Univ., CREST-JST, MASAMI KAWASHIMA, B.O.S.T., Kinki Univ., TOMOJI KAWAI, ISIR-Sanken, Osaka Univ., CREST-JST — Hydroxyapatite (HAp) surface has an excellent ability of adsorption for functional biomolecules such as protein, DNA and so on. We have investigated the application of the HAp as a suitable material for biosensor. Thin film of the sodium – doped HAp (Na – HAp) is prepared in order to decrease the electric resistivity. We have studied variation of the resistance for the Na – HAp thin films with the adsorption of the functional biomolecules. The sample were prepared by a pulsed laser deposition technique on porous alumina substrate. After the deposition, sample was post – annealed in O_2 / H_2O atmosphere in order to crystallize the Na – HAp. The powder X ray diffraction pattern shows the sample has a pure HAp structure. The gold comb electrodes were evaporated on the sample for the resistance measurement. The sample was set in pure water of 100 ml in a beaker. When Fetal Bovine Serum of 100 μl was dropped in the beaker, the Na – HAp shows the drastic change of the AC resistance (at 120 kHz). This result shows that the Na – HAp will be one of the most effective materials for the biosensor applications.

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