The –NH₂ surface showed the spreading and cytoskeleton formation on the substrates. Nitrophenol (pNP) absorption was measured at the conversion of 4 (para)-nitrophenylphosphate (pNPP) to 4-calculated. ALP activity was determined by enzymatic surfaces and the percentage of attached cells was investigated using phalloidin 548 at 4°C. Confocal microscopy was used to scan extent of cell attachment compared to the non-coated surfaces. The fluorescence intensity of cells seeded on the biomineralized surface showed full actin development and formation after 36 h of cell attachment. Cytoskeleton organization of MC3T3-E1 cells is enhanced on Ca-P coated surfaces.

Methods: Three SAMs, 3-amino propyl-triethoxysilane (APTES), 3-triethoxysilylpropyl succinic anhydride (TESPSA) and 3-glycidoxypropyl trimethoxy-silane (GPTMS) were grafted onto the silicon oxide surfaces for use as the template to induce apatite mineralization under argon atmosphere. Surface induced mineralization process was used to coat the SAMs with Ca-P by immersion in a supersaturated solution, which simulates the electrolyte content of physiological fluids complemented with various concentrations of electrolytes, comparable to the human blood plasma (4). Protein coverage on the Ca-P coated surfaces was determined by adsorbing different concentrations of fluorescent labeled Fn on the surfaces under physiological conditions and using spectrophotometer readings. Human osteoblast cells (MC3T3-E1) seeded at 10⁴ cells/cm² was used to investigate the attachment and proliferation on the surfaces and the percentage of attached cells was calculated. ALP activity was determined by enzymatic conversion of 4 (para)-nitrophenylphosphate (pNPP) to 4-nitrophenol (pNP). Absorbance of pNP was measured at 430 nm. Analysis of the cytoskeleton organization was done by selective labeling of F-actin of the MC3T3-E1 cells seeded on the substrates using phalloidin 548 at 4°C. Confocal microscopy was used to scan extent of cell spreading and cytoskeleton formation on the substrates.

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