

### Protein-conjugated, glucose-sensitive surface using fluorescent dendrimer porphyrin

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A multi-functional dendrimer-coated surface has been prepared for effective protein immobilization and detection of protein activity. Silicon surface was first modified with positively-charged amine groups using 3-aminopropyltriethoxysilane(APTES), and then coated with dendrimer porphyrin by electrostatic interaction. Fluorescence and AFM studies showed that dendrimer was homogeneously coated on APTES-modified surface as dome-shaped features which were protruded 1.0~2.5 nm above surface and had diameters ranged 50~100 nm. Dendrimer-modified surface showed greater protein capacity, compared with APTES-modified surface without dendrimer, and protein activity was higher by a factor of two. Using fluorescent property of porphyrin, relative amounts of dendrimer and activities of proteins immobilized on the dendrimer-coated surface were examined by fluorescence microscopy. For example, glucose oxidase (GOX)-mediated glucose oxidation quenched fluorescence emission from focal porphyrin core through a peroxidase-coupled system and from the quantitative relationship between quenching and glucose concentration, we could characterize the GOX-catalyzed reaction.