

## Improvement of Interfacial Adhesion Strength between ZnO NRs and Flexible Films for Piezoelectric Device

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CF<sub>4</sub> (tetrafluoromethane) and CH<sub>4</sub> (methane) plasma was used to synthesize adhesion layer (fluorocarbon related films), which was surface-crosslinked by treatment with PECVD. Chemical changes of the polyimide (PI) surface were characterized by X-ray photoelectron spectroscopy (XPS). The obtained results revealed the presence of fluorine containing functional groups such as CF, CF<sub>2</sub>, C-C (C-H), and CF<sub>3</sub> in the plasma treatment. From the this results, we are supposed to the interface between metals and inorganic material layer enhances adhesion and more particularly relates to a flexible film, a metal-containing layer, and the plasma-treated fluorocarbon film formed on a film wherein the flexible film and the thin film metals and inorganic shows how to enhance the interfacial adhesion. Next, we fabricated a piezoelectric nano-device consisting of ZnO nanorods (NRs) and Au coated ZnO NRs electrode on the flexible PI film.