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Chemical state of Polyvinylidene fluoride irradiated by keV Ar⁺ ion with oxygen ambient

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PVDF has a simple chemical structure(-CH₂-CF₂-) and is one of ferroelectric polymers. Adhesion to Pt or Au is very poor. Electrode on PVDF, which is used up to date, is reactive metal such as Al, Cu, etc. By 1.2 keV Ar⁺ ion irradiation with O₂ ambient, adhesion between Pt and PVDF was significantly improved. Newly formed hydrophilic species are carbon-oxygen bonds. Improved adhesion is originated from the donor-acceptor reaction between metal and PVDF. Identification of newly formed species by ion-assisted reaction will be represented by X-ray photoelectron spectroscopy(XPS) analysis. As dose of Ar⁺ ion increased, amounts of the carbon-oxygen bonds increased and those of the fluorine related bonds decreased.

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