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Dielectric properties of Pt/PVDF/Pt modified by low energy ion beam irradiation

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Polyvinylidenefluoride (PVDF) is most used in piezoelectric polymer industry. Electrode effect on the electrical properties of PVDF has been investigated. Al has been used due to fair adhesion for PVDF. Work function of metal plays an important role on the electrical properties of ferroelectrics for top and/or bottom electrode. However, Al has much lower work function than Pt or Au and so leakage current of Al/PVDF/Al may be large. Pt or Au has not been used for electrode of PVDF system due to poor adhesion. PVDF irradiated by Ar^+ ion beam with O_2 environment takes good adhesion to inert metal. Contact angle of PVDF to triple distilled water was reduced from 75° to 31° at 1×10^{15} Ar^+/cm^2. Working pressure was 2.3×10^{-4} Torr and base pressure was 5×10^{-6} Torr. Pt was deposited by ion beam sputtering and thickness of Pt film was about 1000Å. In previous study, enhancing adhesion of Pt on PVDF was shown. In this study, effect of electrode on PVDF will be represented.