

QCM-based adsorption sensors for NH_3 , NO_2 and SO_2 : Effect of nitrogen implantation on base polymers

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NH_3 , NO_2 , and SO_2 are highly toxic gases that cause severe air pollution. In order to detect low concentrations of these gases in air, QCM-based adsorption sensors were prepared by coating several polymers such as Polyvinyl pyrrolidone (PVP), Polypyrrole (PPy), Poly(3,4-ethylenedioxythiophene) or PEDOT, polyvinyl alcohol (PVA) and they were modified by implanting nitrogen ion of 100 KeV using an ion implant device in KAERI. Sensing polymer films were formed onto quartz piezoelectric surfaces using spinning for 60 s and the loading masses were about 4000~5000 ng. Experimental results show that the adsorption capacities of the polymers were considerably changed by nitrogen ion implantation