

Nitrogen Oxide Gas Sensor Based on Multivalent Ion-Conducting Solids

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Two types of noble nitrogen oxide gas sensor were fabricated by combining Al³⁺-ion-conducting (Al_{0.2}Zr_{0.8})_{20/19}Nb(PO₄)₃ solid electrolyte and cubic rare-earth oxide-potassium nitrate solid solution as an auxiliary sensing electrode. Since the two sensors applying the oxide-anion-conducting yttria-stabilized zirconia or the aluminum metal as the reference material showed theoretical and quantitative NO gas sensing properties at 450 and 250°C, respectively, it was found that, by changing the reference material, the present sensors using the (Al_{0.2}Zr_{0.8})_{20/19}Nb(PO₄)₃ solid electrolyte are promising NO gas sensing devices over a wide temperature range from 250 to 450°C.

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