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Pt-SiC SCHOTTKY DIODE FOR DETECTION OF METHANE GAS, J. H. LEE, Y. H. LEE, C. K. KIM (Dept. of Electrical and Electronic Engr, Soonchunhyang Univ., Asan, Choongnam 336-745 Korea) N. I. CHO (Dept. of Electroic Engr., Sun Moon Univ. Asan, Choongnam 336-840, Korea) D. J. KIM (Dept. of Mat. Sci. & Eng., Seoul National Univ., Seoul 151-742, Korea)

This paper discusses a microelectronic silicon carbide-based methane gas sensor operating at high temperature. A gas sensor utilizing Pt-SiC Schottky diode has been investigated. A Ti layer was sputtered on n-type SiC substrate for ohmic contact, followed by annealing at 45 0℃ in argon environment. A Pt layer (less than 800Å) as a catalytic gate was then sputtered on SiC to complete the sensor. We have investigated the change in diode current, ΔI, as function of hydrogen concentration in air at high temperature (higher than 300℃). A large increase in current upon methane adsorption was shown.

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INFLUENCE OF CATALYST (Pd) LOADING METHODS ON MICROSTRUCTURE AND GAS SENSITIVITY OF SnO_2, K. H. YOON, H. Y. LIM(Dept. of Ceramic Eng., Yonsei Univ., Seoul 120-749, Korea), C. H. KWON, D. H. YUN(LG Corporate Inst. of Tech., Seoul 137-724, Korea)

In order to improve the sensitivity of Pd-loaded SnO_2 semiconductor gas sensors, the influences of amount and method of Pd loading are investigated. The degree of powder agglomeration and the sensitivity were changed with three different loading methods. The coprecipitation and the impregnation after drying methods caused agglomeration of nano-sized primary particles and showed lower sensitivities to propane. The impregnation after calcination method showed a little agglomeration, and consequent higher sensitivity (R_{air}/R_{gas}=21.5 for 5350ppm C_3H_8) and the lowest operating temperature(410℃). The micro-pores between the agglomerates enable the reactive gases to diffuse more easily and react with SnO_2. Pd particles distributed uniformly on the surface of SnO_2 and promoted the electron exchanges between the chemisorbed oxygen ions and SnO_2. It was conformed by XPS study showing the binding energy decrease of Sn3d core level for the three different Pd-loading methods.

P-067

A STUDY OF GAS SENSING PROPI Sn^{+4} DOPED α-Fe_2O_3 THIN FILM, E. J. KIM AND G. E. JANG (Dept. of Chungbuk National Univ., Cheongju, 360-

The tin doped α-Fe_2O_3 thin film were pr Al_2O_3 substrate by PECVD method. Sensi for reducing gas were tested in a gas c resistance of films decreased when the thi exposed to a reducing hydrocarbon atmosp doped α-Fe_2O_3 thin film improved properties. Tin have the effect on suppressi growth and crystallization, and increasing surface area of the sensing element. Thi discuss and compared with the sensing pr pure α-Fe_2O_3 thin film and tin doped c film.

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ANALYSIS ON GAS-SENSING PROPERTIES FOR ORGANIC GAS DETECTION OF MALEATE COPOLYMER LB FILMS

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Experimental results on the gas-sensing properties of maleate copolymer(C_{18}MA-VE_2) Langmuir-Blodgett films are presented. C_{18}MA-VE_2 is used as sensitive materials and deposited on the slide-glass substrates at room temperature using LB method. The results of current-voltage(I-V) measurements exhibit conductivities of order of 10^{-7}[S/cm]. Also, the current-time(I-t) measurements are performed to investigate the gas-detection properties of the C_{18}MA-VE_2 LB films in the presence of organic gases just as chloroform, acetone, ethanol, methanol using the apparatus for the gas detection measurement. Several interesting responses are observed at room temperature, such as reversible response, sensitivity and response time. Response times and sensitivities are evaluated 200～250[sec], 15[times] ～70[times] by odsorption and penetration of organic gases in the relation concentration of 100[%], respectively. Thus, it has a possibility to be applied as a gas sensor.

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