P-085

INTERFACIAL REACTION OF Ni/Pt/Au METALLISATION SCHEME TO P-GaN, I. S. CHANG, J. S. JANG, H. K. KIM, T. Y. SEONG, S. H. LEE and S. J. PARK (Dept. of Materials Science and Engineering, K-JI ST, Kwangju, 506-712, Korea)

Auger electron spectroscopy (AES), Rutherford backscattering spectroscopy (RBS), transmission electron microscopy (TEM) and energy dispersive x-ray spectroscopy (EDS) have been used to investigate contact properties and phase reactions of Ni/Pt/Au (20/30/80 nm) metallisation scheme to p-type GaN. The metallisation scheme showed ohmic character with a specific contact resistance of $\sim 10^{-2} \Omega cm^2$, when rapid-thermal-annealed at 500℃ for 30s. In order to investigate the effects of annealing temperatures on the interfacial reactions and microstructures of Ni/Pt/Au layer on GaN, the films were heat-treated at the temperatures in the range 350℃-700℃. AES, RBS and TEM results showed that phase reactions were dependent upon the annealing temperatures. Presence of Ni_xGa_{1-x} and $[Ni,Pt]_yGa_{1-y}$ phases was found to play an important part in forming ohmic contacts. A model is proposed to describe mechanisms for the formation of ohmic contacts to p-GaN

P-086

HYDROTHERMAL SYNTHESIS OF Zn_2SiO_4:Mn PHOSPHOR AND ITS CHARACTERISTICS,

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Recently attentions are being paid to the luminescence materials excited by vacuum ultraviolet(VUV) radiation due to the increased demands on Plasma Display Panels(PDP). Manganese doped willemite, Zn_2SiO_4, is one of the phosphors being investigated for green color. Over the last decade in the preparation of this material, researchers have developed new chemical methods. Some of those are sol-gel, coprecipitation and hydrothermal technique. These methods are being employed instead of traditional solid state reaction to improve quality and luminescence characteristics of phosphors. Of these processes hydrothermal processing have advantages in many respects such as powder morphology control, cost-effective production of high quality powder and so on.

In this study we investigated hydrothermal synthesis of manganese doped willemite. Various zinc and silica sources were used in the form of nitrate, oxide, carbonate, sulfate, chloride and sol. Effects of the synthesis temperature and pressure on the powder shape and luminous performance were observed. The temperatures and the pressures during synthesis were widely ranged from 150℃~600℃ and 10000~30000psi respectively. Photoluminescence measurements were also done for the hydrothermally synthesized willemite phosphor.

P-087

ELECTRONIC STRUCTURE OF Zn_2SiO_4:Mn PHOSPHOR, HYUNJU CHANG, H. D. PARK, and J. D. LEE (Advanced Materials Div., Korea Research Institute of Chemical Technology, Taejon, 305-600, Korea)

We have investigated electronic structure of Zn_2SiO_4 and Zn_2SiO_4:Mn, using the first principles embedded-cluster discrete variational (DV-Xα) method. Special attention has been given to the impurity role of Mn in Zn_2SiO_4:Mn, which is used for PDP green emission phosphor material. The optical spectra of Zn_2SiO_4:Mn have been determined from the calculated energy eigenvalue spectrum. The local lattice relaxation around the impurity ion will be discussed by comparing theoretical and experimental spectra.

P-088

REFINEMENT OF ZINC SILICATE GREEN PHOSPHOR, HEE DONG PARK, K.-S. Sohn (Advanced Materials Div., KRICT, Taejon, 305-600, Korea), B. H. Cho, T. S. Hwang (Dept. of Chem. Eng, Chungnam National Univ., Taejon, 305-764, Korea), and N. W. Song (Spectroscopy Lab., KRISS, Taejon, 305-606, Korea)

The manganese activated zinc silicate is an efficient green phosphor for plasma display panels. However, it is necessary to decrease the decay time of this phosphor to less than 5 ms. In this study, the manganese activated zinc silicates doped with or without some Groups II or III are investigated. The properties of the phosphors have also investigated with regard to their compositions and manufacturing process. As a result, the decay time of the phosphor was substantially reduced to less than 4 ms while sustaining the emission intensity.

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