Sym. D : Display Materials

LC TECHNOLOGIES

B-TUE-14

CHANGE OF SURFACE MORPHOLOGY AND TILT ANGLE OF SOLUBLE POLYIMIDES ON TEMPERATURE,

CHANGJIN LEE(Adv. Mater. Div., KRICT, Taejeon, 305-600, Korea), Tae Ha Woo, Myongsoo Lee(Dept. of Chem., Yeonsei Univ., Seoul, Korea), Hyuk Jin Cha, Hyuk-Nyun Kim(Res. Park, LG Chem. Ltd., Taejeon, 305-380, Korea) and Chinkap Chung (Dept. of Chem., Keimyung Univ., Taegu, 704-701, Korea)

When polyimide coated ITO glass is rubbed with cloth, the rubbed polyimide surface is able to align liquid crystalline molecules in the rubbing direction with a certain tilt angle. The generated tilt angle is dependent on the structure of polyimides and liquid crystalline molecules. A soluble polyimide was prepared from 3,5-diamino-benzoic acid and was modified to contain pendent alkyl groups. The glass transition temperatures of polyimides were gradually decreased as the pendent group had longer alkyl chain. Polarized FT-IR study of rubbed polyimide showed that the C=O stretching peak near 1730 cm^{-1} increased with polarization perpendicular to the rubbing direction. The rubbed surface of soluble polyimides were investigated using AFM and X-ray photoelectron spectroscopy to gain insights into the relationships between tilt angle and surface morphology. After annealing the polyimide coatings at different temperature, a smoother cluster shape was observed from the AFM image and water contact angle was almost recovered to its initial value, which can be correlated with the decrease of tilt angle.

B-TUE-16

Effect of Glass Content on the slumping of Barrier Rib during Viscous Sintering

W.Y.Kim, J.S.Ahn, H.J.Jeon, S.S.kim and Y.S.Kim
Hongik University,Seoul,Korea

The barrier rib of the plasma display panel(PDP) is usually consisted of two phase: crystalline and glassy phase. The crystalline phase provides the required properties of the barrier rib such as strength and opaqueness; the glassy phase the sinterability at lower temperature. Increase of the glass content in the barrier rib decrease the sintering temperature. this, however, tends to increase the slumping of the barrier rib during the viscous sintering process. Thus, in this study, an attempt was made to quantify the effect of the glass content on the slumping of barrier rib during the viscous sintering process. Several glass frit composition based on $PbO-B_2O_3-SiO_2$ were tested of which sintering temperature is in a range from 450 to 500℃.The barrier rib was shaped either by CO2 or by YAG laser cutting the dry films, which were produced by tape casting the slip containing the glass frit and the crystalline phases. for the crystalline phase, Al_2O_3 and Fe_2O_3 powders were used. The shapes of the barrier ribs prior to and after the sintering were examined using scanning electron microscope.

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PDP TECHNOLOGIES

B-TUE-15

MGO THIN FILMS BY A NEW METHOD, ELECTROSTATIC SPRAY PYROLYSIS, FOR PROTECTING LAYER OF AC-PDP,

S. G. KIM, J. Y. Kim and H. J. KIM (School of Mat. Sci. & Eng., Seoul National Univ., Seoul 151-742, Korea)

MgO thin film has a important role in promoting of PDP performance. Because MgO as the protecting layer has the excellent properties for guarding against ion sputtering, MgO film results in promoting a longevity in addition to its contribution to the memory function. In the conventional AC-PDP, only evaporated or sputtered MgO film is used as the protecting layer of a dielectric layer. The experimental practices have showed that vacuum-deposited MgO films are effective for fabricating stable films. On the other hand, they are not suitable for decreasing production cost and large quantity of production.

Our present investigations were focused on attempt to overcome the vacuum-deposited MgO films' disadvantages and development of a new deposition method, Electrostatic Spray Pyrolysis(ESP). In order to investigate the properties of MgO fims they were analyzed by using XRD, SEM and FT-IR. Also secondary electron emission yield and plasma errosion rate were measured.

B-TUE-17

PREPARATION AND CHARACTERIZATION OF $Ba_xSr_{1-x}TiO_3$ MATERIAL BY SOL-GEL TECHNIQUE,

H.R.Zeng, C.F.Qu, D.Z.Sun, C.H.Yao, Q.H.Jin, S.W.Lin (Shanghai institute of ceramics, Chinese Academy of Science, Shanghai 200050, China)

Barium strontium titanate (BST) powder of various compositions (x=0.75, 0.70, 0.60) for low cost IR imaging applications were prepared via a sol-gel technique homogeneity and lower processing temperature. $Ti(OnBu)_4$, C_2H_5OH, HAC, $Ba(OAc)_2$, $Sr(OAc)_2$ are used as starting materials. The FT-IR techniques was employed to investigate the reaction mechanism in the sol-gel process. The IR analysis indicated that HAC acted not only as an acid catalyst, but also as a ligand modifying the $Ti(OnBu)_4$, there are M-O and M-OAc two link ways of metal ions in BST-gel. The thermolysis procedure for BST-gel indicated that the BST phase started to appear at 700℃ with a minority $BaCO_3$ phase, and reached a fully crystallization at 930℃ has a narrow distribution (D50 < 0.24 μm). Measurements of relative permittivity versus temperature for the BST composition (x=0.75, 0.70, 0.60) sample sintered at 1320℃ have shown that the Curie point (Tc) is at 40, 20,-15℃ respectively; which almost follows the appoximation: T_c=371x-241, suggested by Jaffe et al. For all compositions, the relative permittivity is larger than that of the corresponding BST composition(x=0.75) increased from 4356 at 12.5℃ to 12100 at Curie point; instead, the values of the relative permittivity for solid reaction derived BST sample varied from 3882 to 8074 in the same temperature range. The minimum dissipation factor at room temperature in some of compositions was measured to be 0.0025.