
Neutral Beam Assisted Sputtering Gas Barrier for Stretchable Display

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Nowadays, display markets are shifting its trend from flat panel displays to flexible and stretchable displays. Processes that flexible or stretchable displays require can be divided into two different groups. The first one makes all configurations stretchable and the second one uses substrates consisting of partially high and low elastic regions. The former one requires higher techniques and novel materials and more time in order to fabricate stretchable display. The latter one is more realistic solution for the early stage of the stretchable display because it has less difficulties and can make full use of current mass product equipment. Highly elastic region can be used for forming metal electrode lines and low modulus materials. Low elastic region can be used for high modulus devices or pixels or materials. Therefore, island shaped stretchable device is needed to be formed and patterning process is necessarily required. Low temperature process is also needed to avoid preparing heat-resisting thin film plastic or elastomer. Gas barrier applying on stretchable display demands to be pattern-able and low temperature processed. We have investigated room temperature process-able and pattern-able thin film gas barrier obtaining ultralow WVTR using neutral particle beam assisted sputter.