

Fe-36Ni alloy sheets by electroforming method
for shadow mask application

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The Fe-36Ni(64% Fe and 36% Ni) alloy is well known that it has a very low coefficient of thermal expansion(CTE) and high magnetic permeability around room temperature comparing to the other metallic materials. It can be applicable to the electronic devices, aircrafts, precise instrument and measurement system. Recently, it has been received a special attention to the shadow mask materials for active matrix organic light emitting diode(AMOLED) displays.

In this study, we fabricated and characterized the Fe-36Ni alloy sheets with the thickness of 10~30um on stainless steel substrate by electroforming method. The composition of these materials is confirmed to 64% Fe and 36% Ni by X-ray fluorescence(XRF) analysis. Also, thermo mechanical analysis(TMA) shows that the CTE of these materials is below $1.0 \times 10^{-6}/^{\circ}\text{C}$ between 30 ~ 220°C range. These results are comparable to those of the Fe-Ni alloy sheets by conventional rolling method. Also, this shows the possibility of application as shadow mask materials with large area.

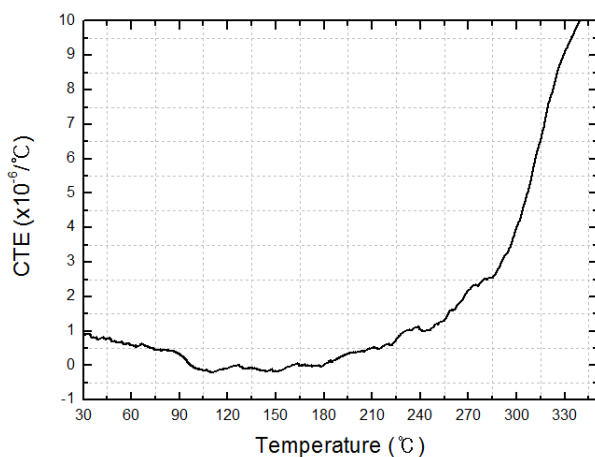


Fig. 1 CTE vs. temperature characteristics of Fe-36Ni alloy sheets by electroforming method