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Study on wet etching behavior of amorphous CuZr thin film in hydrogen peroxide solution for stretchable display

Jinwon Bae <sup>1</sup>, Myeongsik Im <sup>1</sup>, and JongHyun Seo <sup>1</sup>

<sup>1</sup>Korea Aerospace University, Korea, Republic of

The stretchable display, which is a key technology for next-generation display, must be bendable, foldable, flexible and copper thin film also be stretchable in order to achieve this design freely.

Amorphous CuZr was chosen for copper metallization of stretchable display due to excellent elongation properties compared to conventional metals.

In this paper, wet etching behavior of amorphous CuZr thin films in hydrogen peroxide based copper wet etchant was studied using electrochemical potentiodynamic technique and surface analysis. The galvanic currents between CuZr and Cu were also measured using zero resistance ammeter.

It should be noted that the wet etching rate of amorphous CuZr is strongly dependent on the existence of fluoride ions in the wet etchant.

Organic corrosion inhibitors were investigated to solve the problem of relatively high etching rate of copper.

The etching rate of Cu was significantly reduced in the presence of 0.1 wt% of organic inhibitor compared to amorphous CuZr.