

# Nanotech Forum 2021

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## Ni-Cr-Mn-Y based resistive films prepared by co-sputtering

Ni-Cr-Mn-Y based resistive thin films were prepared on glass and Al<sub>2</sub>O<sub>3</sub> substrates by DC magnetron co-sputtering from targets of Ni-Cr-Mn-Y casting alloy and Cu or Tb metals. Electrical properties and microstructures of Ni-Cr-Mn-Y based films under the different proportion of elements and annealing temperatures were investigated. The phase evolution, microstructural and composition of Ni-Cr-Mn-Y based films were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM) and Auger Electron Spectroscopy (AES). When the annealing temperature was set to 350°C, the Ni-Cr-Mn-Y based films with an amorphous structure was observed. The Ni-Cr-Mn-Y films with 6.4% Cu addition annealed at 300°C which was exhibited the resistivity 770  $\square\square$ -cm with +15ppm/°C of the temperature coefficient of resistance (TCR). The Ni-Cr-Mn-Y films with 32% Tb addition annealed at 300°C which was exhibited the resistivity 1750  $\square\square$ -cm with -4.5 ppm/°C of the temperature coefficient of resistance (TCR).



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### Biography

Ying-Chieh Lee is currently a Professor of Materials Engineering, at the National Pingtung University of Science and Technology, Taiwan. He earned a B.S. in Materials Science from the Feng Chia University, Taiwan in 1990, and a Ph.D. in Materials Science and Engineering from National Chung Hsing University in 2003. His research interests include Thin Film Technology, Electrical Ceramics, Recycled Materials, and nanomaterials. He was promoted from Associate Professor to Full Professor with tenure in 2013. He has published more than 80 papers in reputed journals and has been serving as a coatings guest editor.

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