

The characteristics of Ni-Cr-Mn-Y-Cu thin film resistors

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Ni-Cr-Mn-Y-Cu resistive thin films were prepared on glass and Al₂O₃ substrates by DC magnetron co-sputtering from targets of Ni-Cr-Mn-Y casting alloy and Cu metals. Electrical properties and microstructures of Ni-Cr-Mn-Y-Cu films under different proportion of elements and annealing temperatures were investigated. The phase evolution, microstructural and composition of Ni-Cr-Mn-Y-Cu resistive 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-Cu films with an amorphous structure were observed. The Ni-Cr-Mn-Y films with 6.4% Cu addition annealed at 300°C which was exhibited the resistivity 770- Ω cm with +15 ppm/°C of temperature coefficient of resistance (TCR).

Recent Publications

1. Jie-Ting Shang, Chih-Ming Chen, Ta-Chih Cheng and Ying-Chieh Lee (2015) influences of annealing temperature on microstructure and properties for TiO₂ films deposited by DC magnetron sputtering. Japan Journal of Applied Physics 54(12):5501-6.
2. Wei-Ju Chen, Tung-Yueh Liu, Ho-Yun Lee and Ying-Chieh Lee (2018) Ni-Cr-Mn-Y-Nb resistive thin film prepared by co-sputtering. Materials Chemistry and

Physics 210:327-335.

3. Chein-Hui-Yang, Chih-Neng Yang and Ying-Chieh Lee (2017) Surface roughness improvement of alumina substrates coated using aluminum nitride sol gel. Journal of Ceramic Processing Research 18(9):628-633.
4. Cheng-Hsien-Lin, Ho-Yun Lee, Yaw-Teng Tseng and Ying-Chieh Lee (2018) A Study on the Ni-Cr-Mn-Zr thin film resistors prepared using the magnetron sputtering technique. Thin Solid Film DOI: 10.1016/j.tsf.2018.04.015.
5. Ming-Yuan-Yeh, Pin-Yung Lee, Jie-Ting Shang and Ying-Chieh Lee () The effect of thermal oxidation temperatures on the phase evolution and photocatalytic property of tungsten doped TiO₂ thin film. Japan Journal of Applied Physics 57:125801.

Biography

Ying Chieh Lee has completed his PhD from Department of Materials Science and Engineering, National Chung Hsing University. He is a Professor in Department of Materials Engineering, National Pingtung University of Science and Technology. He has published more than 70 papers in reputed journals and has been serving as coatings editorial board member of repute.

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