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Influence of ruthenium on the oxidation behaviour of Cu-CNT nanocomposite interconnect

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Copper based interconnect are widely used in the electronic industry. They provide the conductive path required to achieve connection from one circuit element to another. However, the application of copper based interconnect is often limited by the oxidation behaviour of copper. At elevated temperature and humidity, the bonding strength of copper interconnect deteriorates due to copper oxide formation on the surface which could result at device failure. Effort is made in this study to investigate the effect of ruthenium incorporation on the oxidation and electronic interconnection characteristic of Cu-CNT nanocomposite synthesized through the powder metallurgical technique. The compacted samples were sintered by conventional sintering method. Oxidation test was performed in tube furnace. The samples were oxidized isothermally at different temperature. Electronics weighed balance with the precision of 0.01mg was employed to investigate the weight gain of the sample due to oxidation. The morphology structure, oxide layer thickness and possible crack on the sintered sample were examined using scanning electron microscope with energy dispersive X-ray spectroscopy (SEM/EDS). Phase identification was performed using an X-ray diffraction spectroscopy (XRD). It could be concluded from the result obtained that minor addition of Ru has a positive effect on the oxidation resistance of Cu-CNT nanocomposite due to formation of a well protected oxide.

Level (Hons, MSc, PhD, other)?

Mtech.

Consider for a student award (Yes / No)?

Yes

**Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?**

Yes

Primary author: Mr SULE, RASIDI (MTech Student at TUT)

Co-authors: Mrs ABE, Bolanle Tolulope (Tshwane University of Technology, Electrical Engineering Dept.); Dr OLUBAMBI, Peter Apata (Tshwane University of Technology, Chemical & Metallurgy Dept.)

Presenter: Mr SULE, RASIDI (MTech Student at TUT)

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