

Erratum: “Thermal stability enhancement in nanostructured Cu films containing insoluble tungsten carbides for metallization”

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An error occurred while printing this article in the June issue of the *Journal of Materials Research*. The end of the abstract was cut off, leaving it incomplete. The complete abstract is shown below:

We report enhanced thermal stabilities of nanostructured Cu films containing insoluble tungsten carbides prepared by sputter deposition. Tungsten carbides in the form of W_2C are present in the supersaturated solid solution of Cu, as confirmed by x-ray photoelectron spectroscopy, scanning electron microscopy, and x-ray diffraction analyses. Focused ion beam analysis revealed that the films are thermally stable during annealing when they are in contact with Si without a diffusion barrier, and the copper silicide was not formed up to an annealing temperature of 400 °C. Leakage current characteristic evaluation on SiO_2/Si metal oxide semiconductor (MOS) structure also revealed the superior reliability of Cu with a dilute amount of tungsten carbides, indicating their usefulness in advanced barrierless metallization applications. The films with higher amount of tungsten carbides exhibited good thermal stability at high temperatures and could be rationalized as a consequence of a refined grain structure together with the strengthening effect of W_2C .