

## **Structure evolution of electrodeposited nano-scale copper wires during annealing in wide temperature range**

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**[Introduction]** To investigate structure evolution of electrodeposited and subsequently annealed in wide temperature interval nano-scale copper wires, high-resolution electron backscatter diffraction (EBSD) technique was employed.

**[Experimental]** Damascene trenches were patterned in SiO<sub>2</sub>/Si dielectric films using electron beam lithography and reactive ion etching. The copper interconnectors were made by a normal DC electroplating process. To investigate the influence of annealing at different temperature on the structure of copper wire, the obtained material was annealed at 1.7 deg per second with temperature of 300-600°C for 10 minutes in vacuum ( $5 \times 10^{-5}$  Torr) immediately after the finishing of electrodeposition process.

**[Results and discussion]** As a result of the experiment it can be noted that (i) grain structure in different trench's height is not similar; (ii) the recrystallization and grain growth are observed during post-deposition annealing.

**[Acknowledgement]** Gratefully acknowledge to Mr. T. Namekawa for technical assistance.