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利用者名（日本語） :申盛斌，母鳳文， 日暮栄治，須賀唯知
Username (English) :Seongbin Shin, Eiji Higurashi, Tadatomo Suga
所属名（日本語） :東京大学大学院工学系研究科
Affiliation (English) :Graduate School of Engineering, The University of Tokyo

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1. 概要（Summary）

Hydrogen radical and fast atom beam (FAB) treatments were used to remove the oxide layer of copper metal. AFM result has shown a minor roughness change whilst the XPS result has shown a significant difference in the oxidation trends of coper surface after each experiment. Re-oxidation status has been measured to analyze the trends for each removal treatment.

2. 実験（Experimental）

【利用した主な装置】

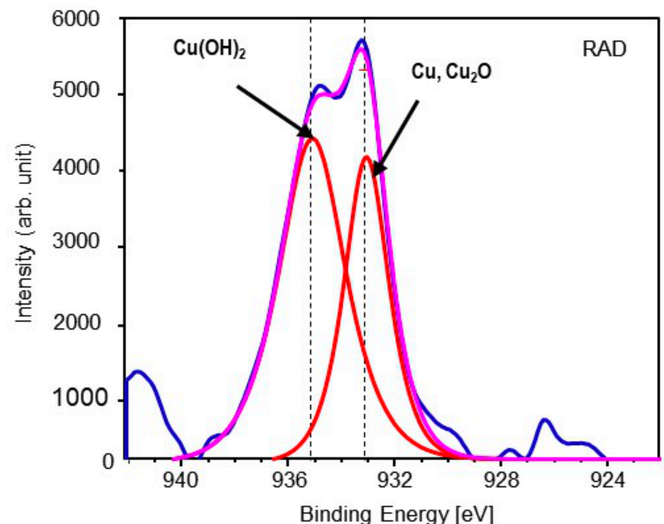
ブレードダイサー DAD3650, L Tracell,

【実験方法】

Copper deposited wafers was diced using the dicing machine provided by the Takeda cleanroom. The model of DAD3650 was used to cut the wafer into 1 cm X 1 cm sizes.
Each chip was treated by the suggested methods which then was reconfirmed with the AFM analysis for the surface roughness examinations.

3. 結果と考察（Results and Discussion）

The samples were exposed to the air atmosphere to evaluate the re-oxidation behavior after the treatments. Compared to FAB treatment, suppression of the copper oxidation was found after the hydrogen radical treatment.



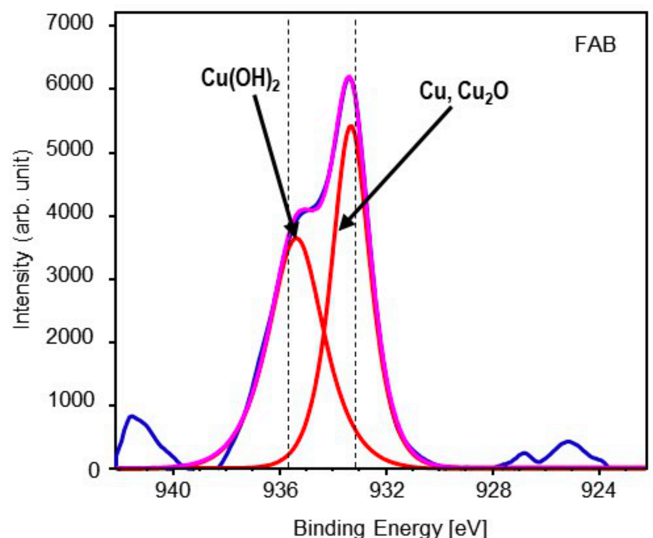


Figure 1 XPS Cu main peak after 48 hours of exposure. a) Hydrogen radical treatment b) FAB

4. その他・特記事項（Others）

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関連論文

[1] S. Shin, E. Higurashi, K. Furuyama, and T. Suga, Hydrogen radical treatment for suppression of oxidation and contamination at copper surfaces, The 8th Japan-China-Korea MEMS/NEMS with NANO KOREA 2017, pp. 24-25, Kintex, Korea, July 13-15 (2017).

[2] S. Shin, E. Higurashi, K. Furuyama, and T. Suga, Hydrogen radical treatment for suppression of oxidation and contamination at copper surfaces, 第34回「センサ・マイクロマシンと応用システム」シンポジウム, 01am1-A-6, 広島国際会議場, 2017年10月31日～11月2日, 奨励賞.

5. 論文・学会発表（Publication/Presentation）

なし

6. 関連特許（Patent）

なし.