Effect of FOUP Atmosphere Control on Process Wafer Integrity in sub 20 nm Device Fabrication

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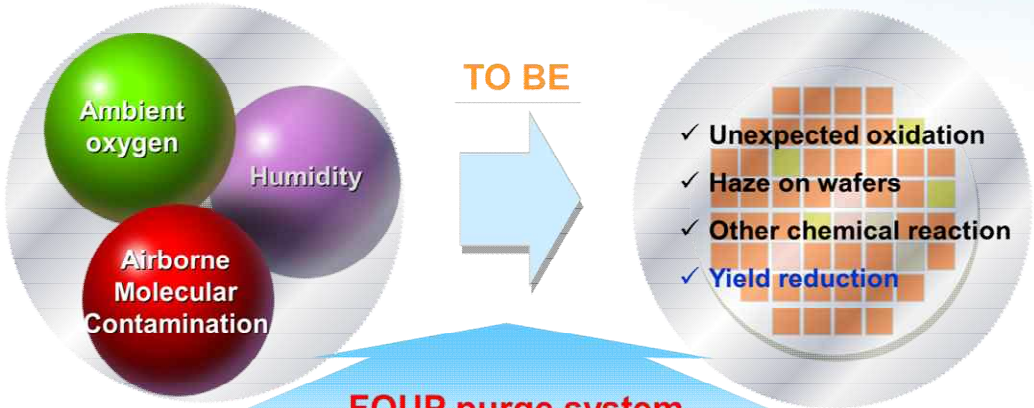
Introduction

What are the effects of environment?

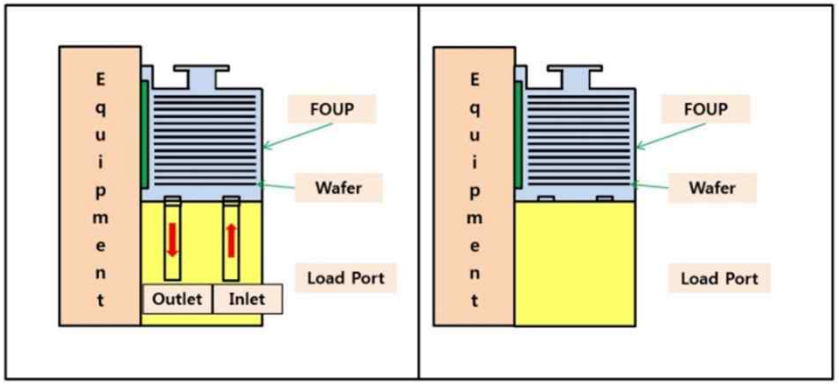


FOUP purge system

- FOUP purge system avoids oxidation and other chemical reactions on the wafer surface

Experimental

1. FOUP System



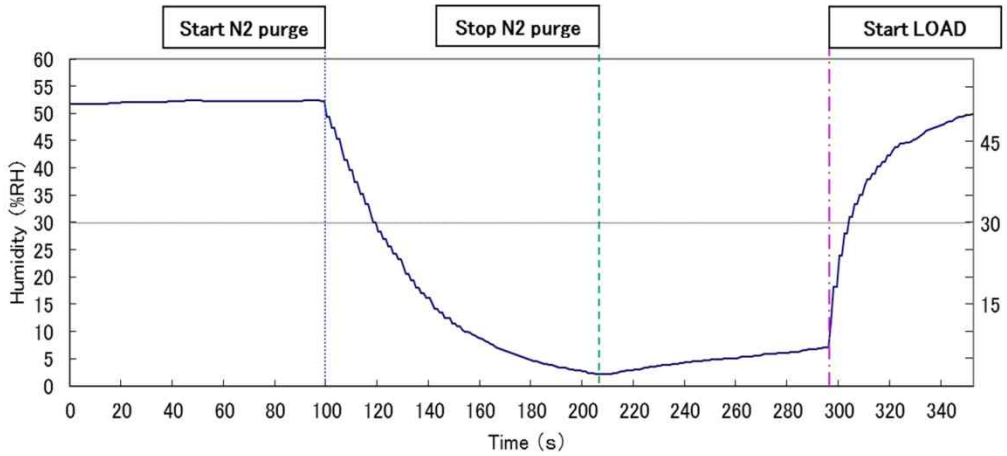
❖ **Materials**

- Bare Si wafer
- Cu wafer

❖ **Process Condition**

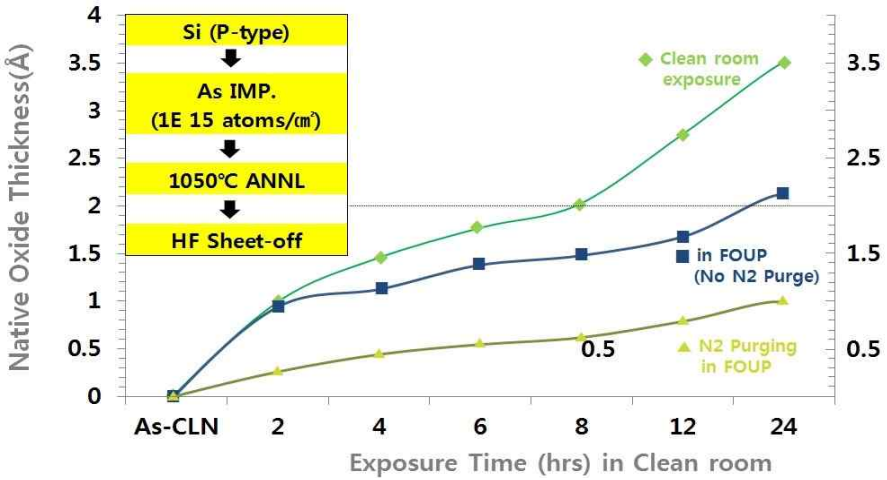
1) Si wafer left in clean room as a ref.
2) Si wafer left in FOUP w/o N_2 purge
3) Si wafer left in N2 purge FOUP
   - with various time

2. Effect of N_2 Purge on Humidity

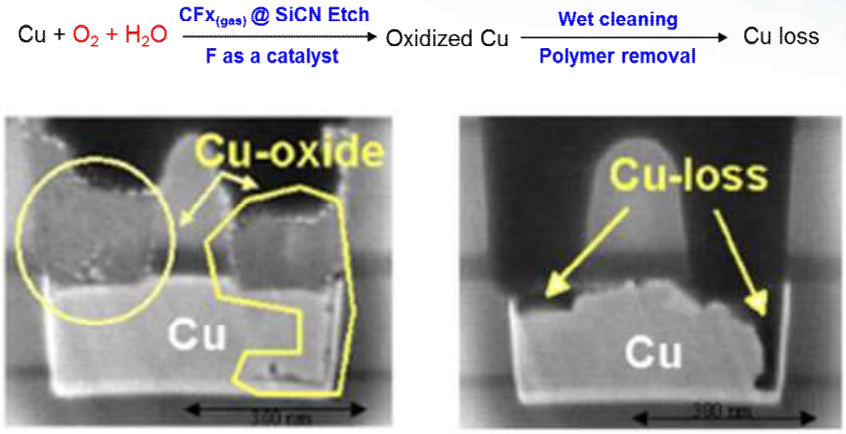


Results

Morphology Observation



Morphology Observation



Cu Oxidation Process and Cu Loss by Wet Clean