IEUVI Resist TWG
Toyama, Japan
October 6, 2013

- Karen Petrillo – introduction
  - All resist vendors reaching 15-16 nm HP with CAR
  - Contact hole resolution now 22-24 nm HP
  - Outgas testing
    - Industry estimate 250 samples/month needed
    - Tools estimate 90 samples/month capability
    - Report 18 samples/month actual results last 6 months
- Shannon Hill – NIST outgas update
  - Capacity 6/month, currently excess capacity
  - 100% of customer samples pass cleanable specification
  - Fluorine may be cleaned by exposure, but less cleaning at lower intensity
- Inoue-san – EIDEC outgas update
  - 84 customer samples, 77% pass cleanable
  - Sulfur desorbs during high power XPS with neutralizer on
  - Suggest lower open area of mask could be used to scale outgas requirement
  - Contamination from resist is primarily due to PAG

- Greg Denbeaux – ROX outgas update
  - 97 samples tested so far, 55% pass cleanable
  - Hydrogen cleaning appears to remove sulfur
  - Exposure appears to remove fluorine
- Eric Hendricx – IMEC outgas update
  - 90 customer samples tested, 75% pass cleanable
  - RGA correlates well with contamination growth
- Jae Sohn – EUVT update
  - 75% pass cleanables
- Jae Sohn – Round robin testing
  - Resist 1 vary between 1.9 - 3.72 nm
  - Resist 2 vary between 1.81 – 2.75 nm
- Wang Yueh – MORE Project update
  - Cobalt based oxalate non CAR results look promising
  - Approximately 18 nm resolution
  - Best so far is 22 nm dense lines at 20 mJ/cm2

- Tagawa-san – Time resolved spectroscopy of nanoparticle EUV resists
  - HFO nanoparticles react effectively with solvated electrons
  - During the pulse irradiation, aggregation of the HFO nanoparticles occurs
- Idriss Blakey – Block copolymer systems for DSA
  - Develop crosslinked styrene MMA surface for neutral surface energy to allow perpendicular blocks to grown on it
  - Working on PS-PLA block copolymer for higher χ value and higher etch selectivity than common PS-PMMA system
  - Additives are being used to increase χ in PS-PMMA