iEUVi Mask TWG

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Mask TWG: Mission & Objective

- Mission:

  Ensure EUV Mask Infrastructure Readiness for:
    - Pilot Line Production 2010 – 2012
    - High Volume Manufacturing 2013 - 2016
- Objectives:
  - Identify Required Standards
  - Coordinate industry-wide conversions, such as future mask incidence angle change.
  - Identify any gaps between current industry efforts and projected future needs
  - Highlight gaps to member organizations and IEUVI Board for action

International EUV Initiative

Europe
More Moore
LETI
PREUVE
IMEC
I.C. Mfg
Litho Suppliers
- others

Japan
SELETE
EUVA
I.C. Mfg
Litho Suppliers
- others

International EUV Initiative

IEUVI

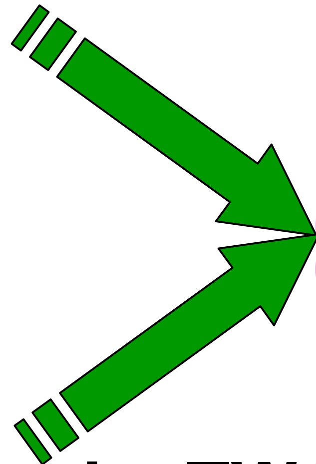
Korea
Korea National EUVL R&D Program
I.C. Mfg
Litho Suppliers
- others

USA
SEMATECH
RFNY
VNL
SRC
I.C. Mfg
Litho Suppliers

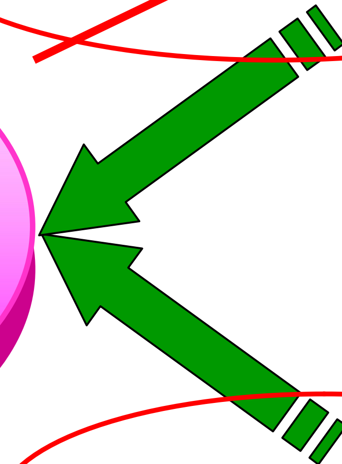
IEUVI http://www.ieuvi.org

International EUV Initiative

IEUVI Source TWG



IEUVI Board



IEUVI Resist TWG

IEUVI Mask TWG

International EUV Initiative
Executive Board
(next meeting 2/25/10)

http://www.ieuvi.org
Executive Chair: Paolo Gargini

- *Regular coordination meetings*
- *Technical Working Groups*
- *Benchmarking data exchange*
- *Co-sponsorship of workshops*

Mask TWG: 2009 Accomplishments

- SEMI Standard Accomplishment
  - E152 - Mechanical Specification of EUV Pod for 150 mm EUVL Reticles
    - Adjudicated in April 2009, published in July 2009
  - P40 - Mounting Requirements for EUV Masks
    - Adjudicated on July 14, 2009, will be published this year
  - P37 – Specification for Extreme Ultraviolet Lithography Substrates and Blanks
    - Adjudicated in September, 2009, will be published this year
  - Specification of Fiducial Marks for EUV Mask Blanks
    - Blue ballot submission in November, ‘09; yellow in Q2, ‘10
- Dual Pod Status
  - Four pre-production outer pods arrived in Nov. They were built from new mold which will be used for future mass-production.
  - Robotic handling, Storage and Shipping tests completed. Average adders are 0.01 (robotic handling), 0 (storage test), 1 (shipping test) respectively. Entegris will keep improving the shipping test performance.
- ITRS EUV Mask Specifics
  - EUV Table updated with 7 parameters recommended by the sub team. 2009 revision was officially released and is now available

iEUVi Mask TWG Master Agenda

Once Per Year	
Tools – inspection, writing, cleaning, repair	Mask Build TWG
Materials – substrate, films	Mask Build TWG
Flatness compensation	Mask Use TWG
CTE of substrate and mask build/use temperatures	Mask Use TWG
Incident Angle of Exposure Light	Mask Use TWG
ITRS Roadmap	Mask Use TWG
Potential Pellicles	Mask Use TWG

Twice Per Year	
Defects	Mask Build TWG
SEMI Standards opportunities and status for substrate, blanks, masks	Mask Build TWG
Fiducial Mark Implementation	Mask Use TWG
Carriers	Mask Use TWG

Agenda – 2/21/10

Start	Complete	Duration	Topics	Who
9:00 AM	9:05 AM	0:05	Introduction and Greetings	David Chan (SEMATECH)
9:05 AM	9:35 AM	0:30	4466B - Carriers (Data on standardization)	George Huang (SEMATECH/UMC)
9:35 AM	10:20 AM	0:45	Blank Sidewall / Backside Standardization	Jaewoong Sohn / Frank Goodwin (SEMATECH)
10:20 AM	11:20 AM	1:00	Fiducial Mark Blue Ballot Summary Plan for Yellow Ballot	Long He (Intel)
11:20 AM	11:50 AM	0:30	Recent data on FM application in defect mitigation	Pei-Yang Yan (Intel)
11:50 AM	12:00 PM	0:10	Wrap Up and Plans for Next TWG Meeting	David Chan / George Huang

Closing Remarks

IEUVI Mask TWG

- Masks are consistently the top 2 issues facing EUVL
- Sources limit throughput, but masks could end up preventing any yield
  - Masks are more of a ‘Showstopper’
- There are still many issues and activities related to masks to cover in the TWG.

Focus of the two Mask TWGs

- EUV Mask Build TWG:
  - Infrastructure items directly related to building masks
    - Tools – inspection, writing, cleaning, repair
    - Materials – substrate, films
    - Defects
    - SEMI standards for substrates, blanks, masks
- EUV Mask Use TWG:
  - Issues more directly related to using masks
    - CTE of substrate and mask build/use temperatures
    - Flatness compensation
    - Incident angle of exposure light
    - Defect masking thru pattern placement (fiducials)
    - Carriers
    - Potential Pellicles
    - ITRS roadmap
- Suggestions are welcome

Next meeting of IEUVI Mask TWG(s)

- We are looking for suggestions in tasks priorities and topics of discussions
- Inputs on meeting formats, etc. are welcome
- Schedule: @ EUV Symposium, Oct 2010, Kobe, Japan