



iEUVi Mask TWG

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Lead: David.Chan@SEMATECH.org

Co-Lead: George.Huang@SEMATECH.org

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Mask TWG: Mission & Objective



- **Mission:**

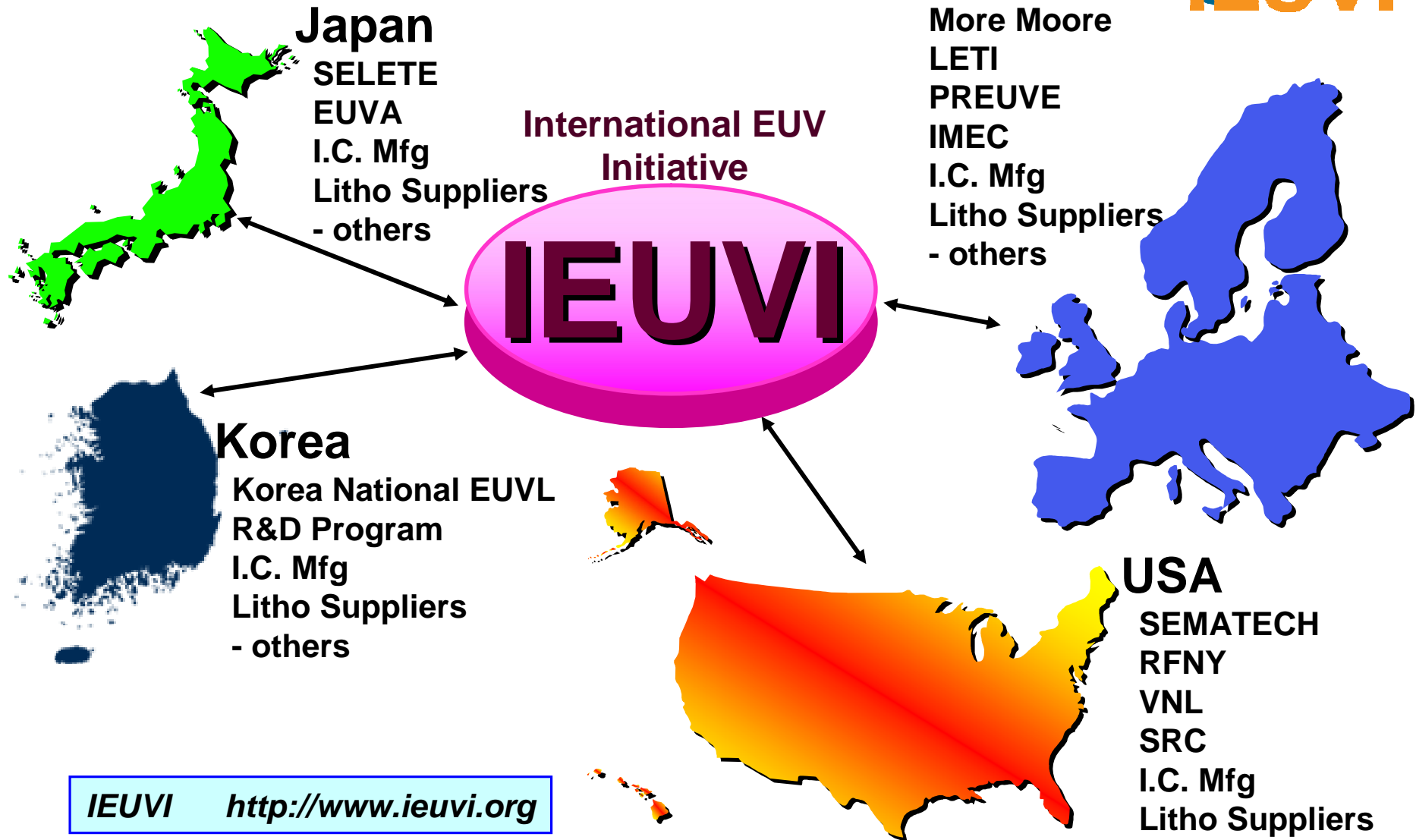
Ensure EUV Mask Infrastructure Readiness for:

- 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

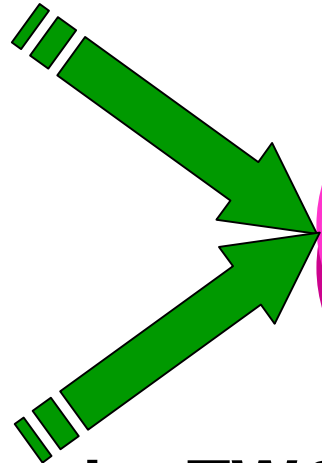
International EUV Initiative



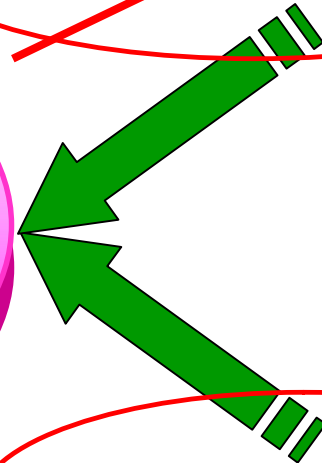
International EUV Initiative



IEUVI Source TWG



***IEUVI
Board***



IEUVI Resist TWG



**International EUV Initiative
Executive Board**

<http://www.ieuvi.org>

Executive Chair: Paolo Gargini (next meeting 10/23/09)

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

Mask TWG: 2009 Accomplishment



- 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
 - Agreement made by taskforce to submit blue ballot in Q4, '09; yellow in Q1, '10

- Dual Pod Status

- SEMI compliant Dual Pods arrived in SEMATECH in June
- Particle protection testing is on-going

- ITRS EUV Mask Specifics

- Team formed. Survey results rolled up.
- 7 parameters with agreed changes. Six areas identified champions for next revision.

iEUVi Mask TWG Agenda



Start	Complete	Duration	Topics	Who
9:00 AM	9:10 AM	0:10	Introduction and Greetings	David Chan (SEMATECH) / George Huang (UMC/SEMATECH)
9:10 AM	10:40 AM	1:30	SEMI Standards Updates and 2010 Revision	
			P40	George Huang
			E152 - Carriers	George Huang
			P37	David Chan / John Zimmerman (ASML)
			Fiducial Mark	David Chan
10:40 AM	10:55 AM	0:15	Break	
10:55 AM	11:15 AM	0:20	Strawman Fiducial Mark Alignment Budget	Noreen Harned
11:15 AM	12:00 PM	0:45	Flatness compensation Updates / Challenges	Jaewoong Sohn (SEMATECH)
12:00 PM	1:00 PM	1:00	Lunch	
1:00 PM	1:45 PM	0:45	ITRS EUV Mask Specific Requirements	David Chan / John Zimmerman (ASML)
1:45 PM	2:30 PM	0:45	Defectivity Budget Sheet	George Huang / David Chan
2:30 PM	2:45 PM	0:15	Break	
				Moderators: Wolf Staud (AMAT); David Chan; George Huang Panelists: 1) Ted Liang - Intel 2) Sean Huh - Samsung / SEMATECH 3) Rik Jonckheere - IMEC 4) Chris Clifford - UC Berkeley 5) T. Terasawa - SELETE 6) Bruno LaFontaine - GlobalFoundries
2:45 PM	4:45 PM	2:00	Panel Discussion: Defect Printability Mask Standardization - Attributes and Possibility	
4:45 PM	5:00 PM	0:15	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: @ SPIE, Feb 2010, San Jose, CA