iEUVi Mask TWG

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Quick Introduction From Audience

- Identify your name
- Organization you represent
- Brief responsibility or interest in Mask TWG

- Friendly Reminder: Please turn your cell phone in silent mode.

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
  – Identify any gaps between current industry efforts and projected future needs
  – Highlight gaps to member organizations and IEUVI Board for action

EUV Focus Areas 2006-2010: 22 nm half-pitch insertion target

2006 / 32hp	2007 / 22hp	2008 / 22hp	2009 / 22hp	2010 / 22hp
1. Reliable high power source & collector module	1. Reliable high power source & collector module	1. Long-term source operation with 100 W at IF and 5MJ/day	1. Mask yield & defect inspection/review infrastructure	1. Mask yield & defect inspection/review infrastructure
2. Resist resolution, sensitivity & LER met simultaneously	2. Resist resolution, sensitivity & LER met simultaneously	2. Defect free masks through lifecycle & inspection/review infrastructure	2. Long-term reliable source operation with 200 W at IF	1. Long-term reliable source operation with 200 W at IF
3. Availability of defect free mask	3. Availability of defect free mask	3. Resist resolution, sensitivity & LER met simultaneously	3. Resist resolution, sensitivity & LER met simultaneously	2. Resist resolution, sensitivity & LER met simultaneously
4. Reticle protection during storage, handling and use	4. Reticle protection during storage, handling and use	• Reticle protection during storage, handling and use	• EUVL manufacturing integration	• EUVL manufacturing integration
5. Projection and illuminator optics quality & lifetime	5. Projection and illuminator optics quality & lifetime	• Projection / illuminator optics and mask lifetime		

EUVL pilot line insertion in 2011/12 and HVM introduction in 2013

Green	Meet spec or solution is in place.
Yellow	Solution is being work on. Should be ready
Red	No work yet or late. Will not be ready.

22nm in 2013

Blank Shops — Mask Shops — Wafer Fabs

Substrate

Front:
- Polish Def.
- Flatness
- Defectivity
- Defect Analy.
- Roughness
- CTE
- Clean
- Repair
- Inspection

Back:
- Hardness
- Defectivity
- Roughness
- Flatness
- Conductivity

Absorber
- Dep Defect
- Inspection
- Clean
- Thickness
- Mat. Type
- Stress / Flat

Patterning
- Fast Writer
- Image Fid
- Patt Comp
- FM Align
- Place. Comp
- Asorber Etch
- Defectivity

Protection
- Scan Cleanl
- Back Adders
- Prog. Def.
- C-Contamin
- Shipping
- Handling
- Storage Amb
- DP Clean
- Dual Pod ID
- Trans in air
- Trans in Vac

Blank
- ML Dep.
- Cleans
- Refl Tool
- Def Loc Tool
- Inspection
- Repair
- Flat Comp
- ML Reflec
- Roughness
- Defect Analy.
- Defectivity
- Fid. Marking

Pattern Metro.
- CD
- Placement
- Optical
- Actinic PMI
- eBeam PMI

Pattern Clean
- PRE
- Def. Char.
- Patt. Damage
- Tool/Process
- Lifetime
- CD Change
- Back Cont.

Repair & Review
- AIMS
- AIT
- eBeam
- FIB
- Opaque
- Phase Rep
- Repair Clean

In Fab Defects
- Inspect
- Clean

Agenda

Start	Complete	Duration	Topics	Who
8:30 AM	8:45 AM	0:15	Introduction and Greetings	David Chan (SEMATECH)
8:45 AM	9:15 AM	0:30	Proposed P37 EUV Blank Standard Updates	John Zimmerman (ASML)
9:15 AM	9:35 AM	0:20	Defect Reduction Strategy Update	Frank Goodwin (SEMATECH)
9:35 AM	11:05 AM	1:30	Defect Free Reticle Protection / Carrier Standard Updates	Long He (Intel) / John Zimmerman (ASML)
11:05 AM	11:50 AM	0:45	Dual Pod Implementation Strategy and Gap Analysis - From Blank Suppliers, Mask Makers, to Wafer Fab	Long He (Intel) / David Chan (SEMATECH)
11:50 AM	12:00 PM	0:10	Wrap Up and Plans for Next TWG Meeting	David Chan (SEMATECH)

Closing Remarks

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 2011, Miami USA