Accelerating the next technology revolution

iEUVi Mask TWG

September 30, 2012, Brussels, Belgium

Organizing Committee:

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John Zimmerman – ASML
Ota Kazuya – Nikon
Markus Bender – AMTC
Pawitter Mangat – GLOBALFUNDERIES
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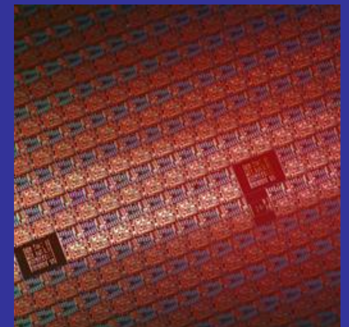

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Round Table Introduction

SEMATECH

- Please introduce yourself by identifying
  - Your name, and
  - Organizational affiliation

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EUV Focus Areas 2007-2011: 22 nm half-pitch insertion target

2007 / 22hp	2008 / 22hp	2009 / 22hp	2010 / 22hp	2011 / 22hp
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	1. Long-term reliable source operation with 200 W at IF*
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	2. Mask yield & defect inspection/review infrastructure
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	3. Resist resolution, sensitivity & LER met simultaneously
4. Reticle protection during storage, handling and use	• Reticle protection during storage, handling and use	• EUVL manufacturing integration	• EUVL manufacturing integration	• EUVL manufacturing integration
5. Projection and illuminator optics quality & lifetime	• Projection / illuminator optics and mask lifetime			

** This requires a 20 X improvement from current source power status*

HVM introduction in late 2013 if productivity challenges can be met

Mask TWG Mission & Objective

- **Mission:**

  Ensure EUV mask infrastructure is ready for High Volume Manufacturing (HVM) 2013 - 2016

- **Objectives:**
  - Identify required standards
  - Identify potential gaps between industry’s current efforts and projected needs for HVM
  - Highlight gaps to member organizations and IEUVI Board for action
  - Coordinate industry-wide EUV mask conversion

Today's Meeting Objectives

- **EUV Blanks**
  - Update blank defectivity status and discuss reduction paths
  - Update what's being changed to P37 blank standard
- **Blank Defect Mitigation**
  - Discuss fiducial marker patterning and tool integrations
  - Discuss overall plans
- **Reticle Handling**
  - Discuss carrier development status and learning of uses
  - Update E152 remaining issues and revision status
- **EUV Pellicle**
  - Initiate industry discussion
  - Requirement discussion

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Agenda

Start	End	Topic	Presenter	
1:00 PM	1:15 PM	Introduction	L He (SMT/INTC)	1
		EUV Blank		
1:15 PM	1:45 PM	EUV Mask Blank Status, Challenges, And Closing Remaining Gaps	F Goodwin (SMT)	2
1:45 PM	1:55 PM	P37 EUV Mask Blank Standard Revision Update	J Zimmerman (ASML)	3
		Reticle Handling		
1:55 PM	3:00 PM	IMEC Carrier Use Update	R Jonckheere (IMEC)	4
		ASML Reticle Shipping in EUV-pods	J Zimmerman (ASML)	5
		Entegris Carrier Update	T Kielbaso (Entegris)	6
		TNO Shared Development Platform For Particle-Free Reticle Handling	R van Vliet (TNO)	7
		Follow-on Issues of E152 Standard	L He (SMT/INTC)	8
		Discussions		8
3:00 PM	3:15 PM	--- Break ---		
		Blank Defect Mitigation		
3:15 PM	4:30 PM	Fiducial TF July Meeting Summary	L He (SMT/INTC)	10
		Fiducial Generation And Characterization	M Tetsunori (EIDEC/INTC)	11
		e-beam Writter Intergartion Status	Y Shusuke (Nuflare)	12
		AGC Fiducial Update	Y Ikuta (AGC)	13
		KT Fiducial Requirements	G Inderhees (KT)	14
		Discussions		15
		EUV Pellicle		
4:30 PM	5:30 PM	Review of Past EUV Pellicle Publications	H Levinson (GF)	16
		Pellicle Requirement Discussions	L He (SMT/INTC)	17
		Discussions		17
5:30 PM	5:40 PM	Conclusion And Adjourn		19