

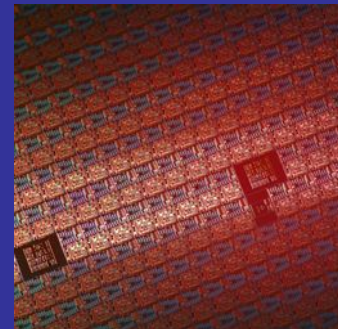


Accelerating the next technology revolution

# EUV Optics/Mask Contamination – Critical Issues Survey Results

Andrea Wüest, SEMATECH

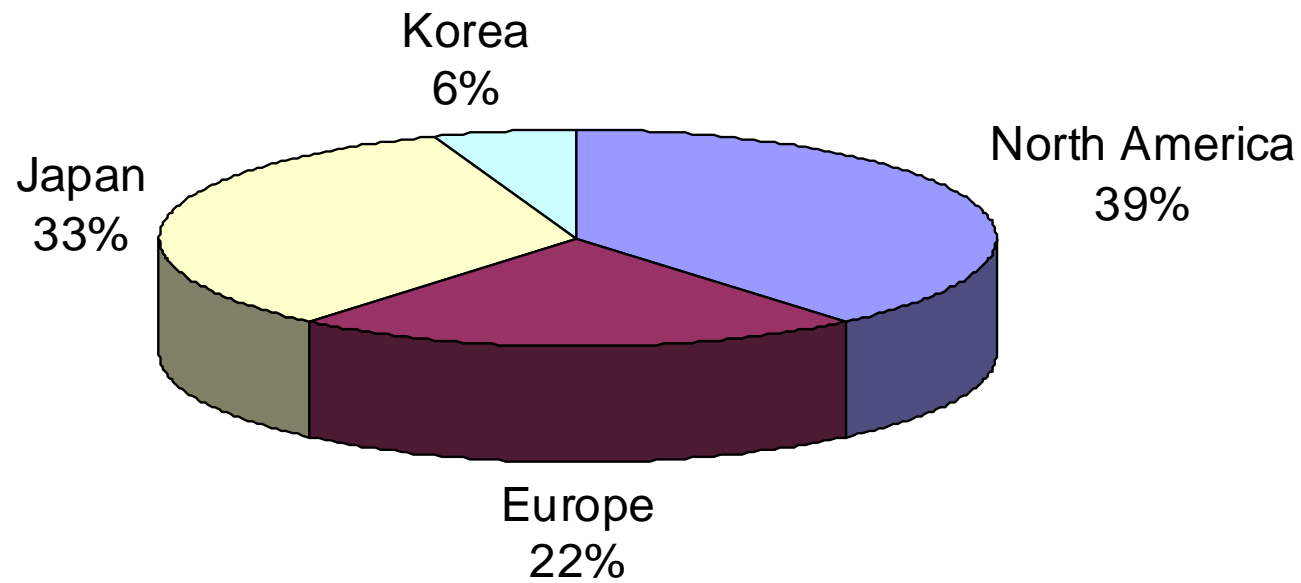
IEUVI Optics Contamination TWG,  
Lake Tahoe, October 2, 2008



Copyright ©2008

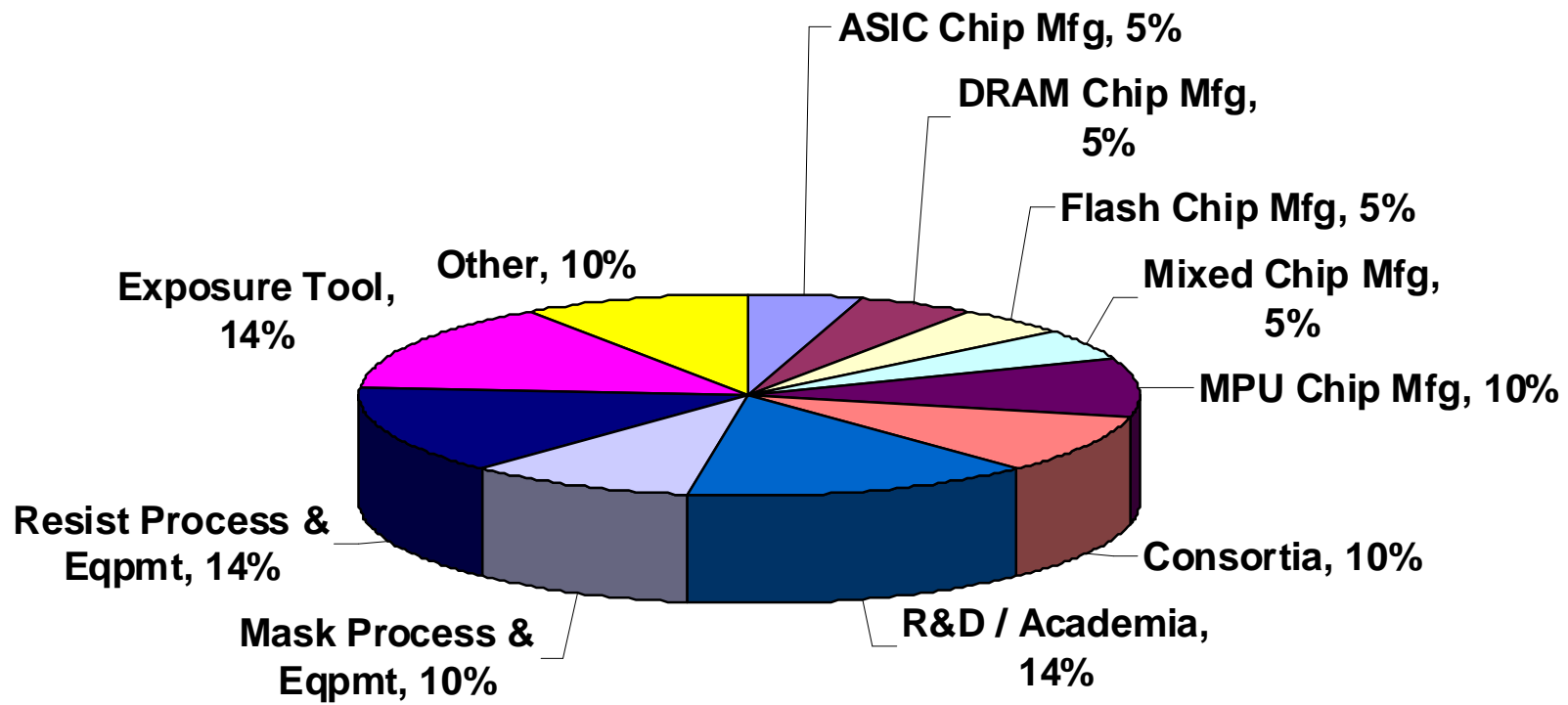
SEMATECH, Inc. SEMATECH, and the SEMATECH logo are registered servicemarks of SEMATECH, Inc. International SEMATECH Manufacturing Initiative, ISMI, Advanced Materials Research Center and AMRC are servicemarks of SEMATECH, Inc. All other servicemarks and trademarks are the property of their respective owners.

# Demographics

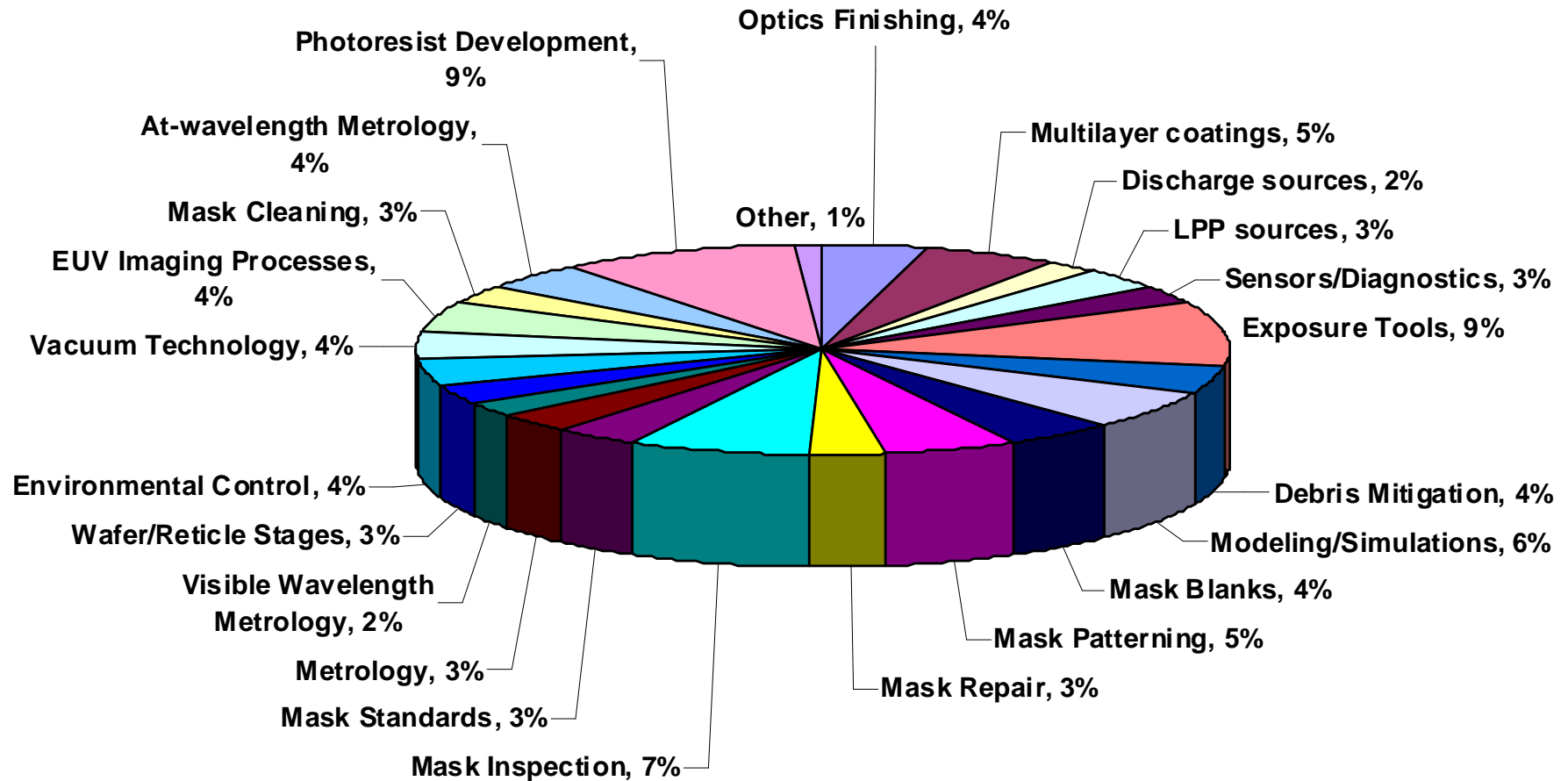


Total 18 responses

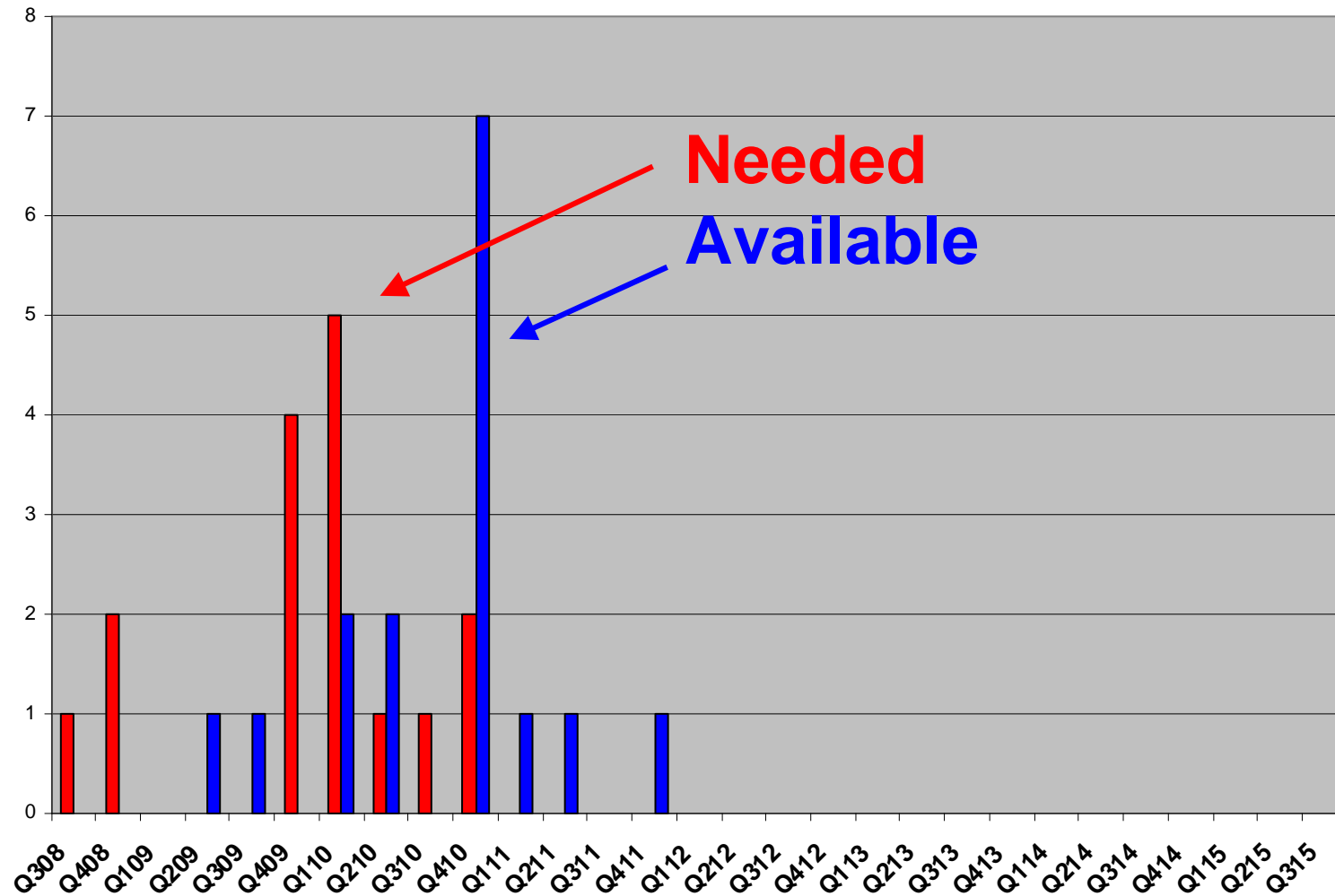
# Product



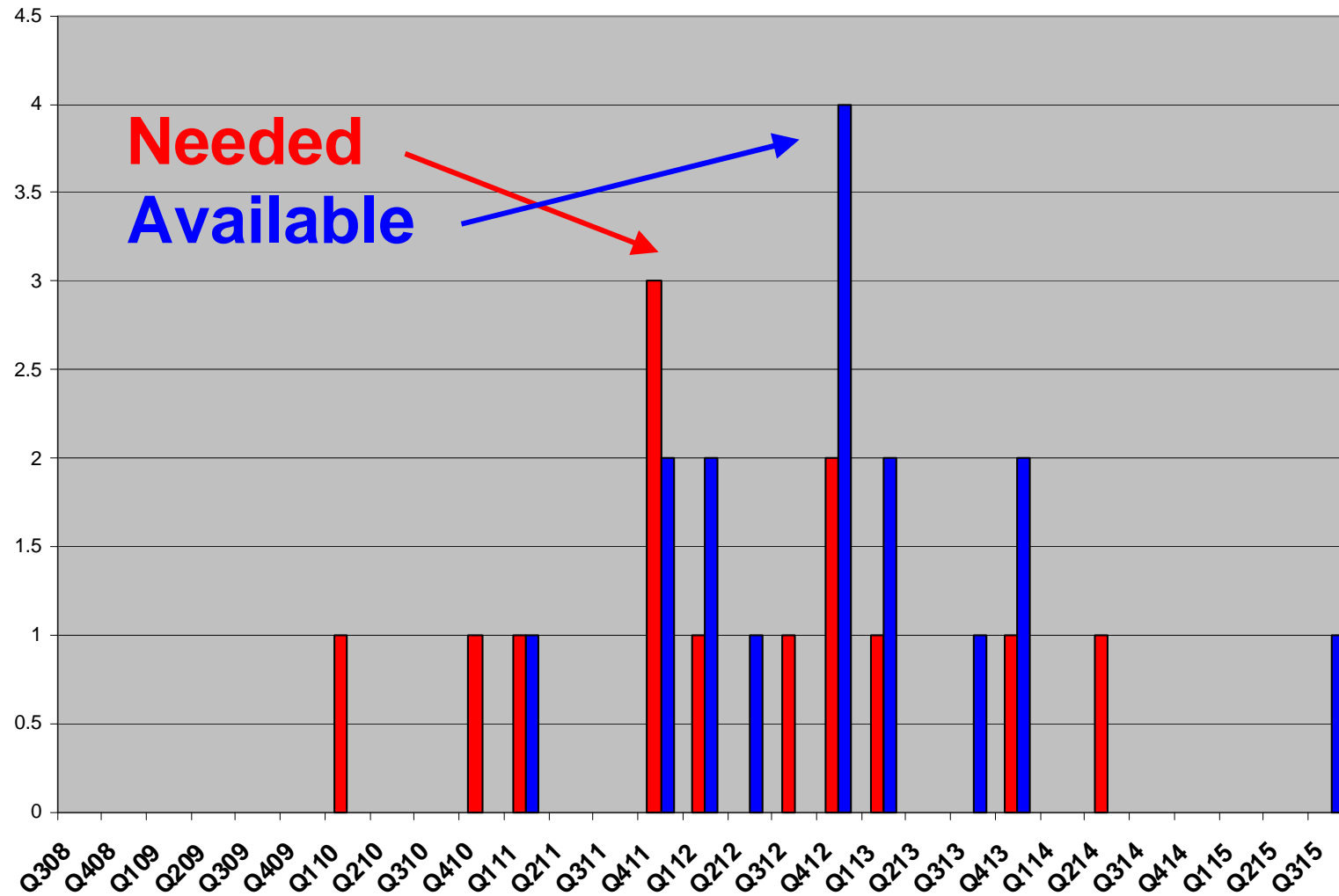
# EUV Focus Areas



# When are **BETA** level EUVL exposure tools needed/available?



# When are **HVM** level EUVL exposure tools needed/available?



# Projection Optics Critical Issues



Ranking (10/08)	Critical Issue	Gap Analysis
1	Carbon deposition (outgassing from vacuum components, wires, and other materials)	Yellow
2	Optics cleaning (in situ)	Yellow
3	Carbon deposition (resist outgassing)	Yellow
4	Oxidation (residual water)	Yellow
5	Accelerated lifetime testing/understanding scaling laws	Yellow to Red gradient
6	Availability of quantitative contamination model	Red
7	Other	Red
8	Contamination due to EUV source	Yellow to Red gradient
9	Out-of-band radiation	Yellow

## For HVM Implementation of EUVL

Survey: 18 Responses

Manufacturable solutions exist, and are being optimized	Green
Manufacturable solutions are known but needing further development	Yellow
Manufacturable solutions are not known.	Red

# Illumination Optics Critical Issues



Ranking (10/08)	Critical Issue	Gap Analysis
1	Carbon deposition (Outgassing from vacuum components, wires, and other materials)	Yellow
2	Contamination due to EUV source	Orange
3	Optics cleaning (in situ)	Yellow
4	Accelerated lifetime testing/understanding scaling laws	Orange
5	Oxidation (residual water)	Yellow
6	Out-of-band radiation	Yellow
7	Availability of quantitative contamination model	Red
8	Carbon deposition (resist outgassing)	Yellow
9	Other	Red

## For HVM Implementation of EUVL

Survey: 18 Responses

Manufacturable solutions exist, and are being optimized	Green
Manufacturable solutions are known but needing further development	Yellow
Manufacturable solutions are not known.	Red



# Exposure-Induced Mask Contamination

## Critical Issues



Ranking (10/08)	Critical Issue	Gap Analysis
1	Carbon deposition (Outgassing from vacuum components, wires, and other materials)	Yellow
2	Mask cleaning (patterned mask, after exposure, ex situ)	Orange
3	Carbon deposition (resist outgassing)	Yellow
3	Availability of quantitative contamination model	Red
5	Oxidation (residual water)	Yellow
6	Accelerated lifetime testing/understanding scaling laws	Orange
7	Out-of-band radiation	Yellow
7	Contamination due to EUV source	Orange
9	Other	Red

### For HVM Implementation of EUVL

Survey: 18 Responses

Manufacturable solutions exist, and are being optimized	Green
Manufacturable solutions are known but needing further development	Yellow
Manufacturable solutions are not known.	Red