

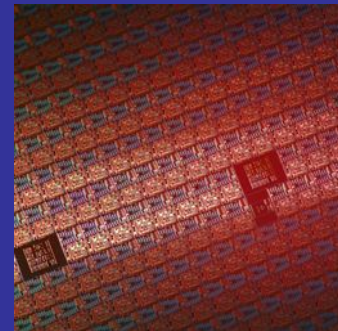


Accelerating the next technology revolution

EUV Optics/Mask Contamination – Critical Issues Survey Results

Andrea Wüest, SEMATECH

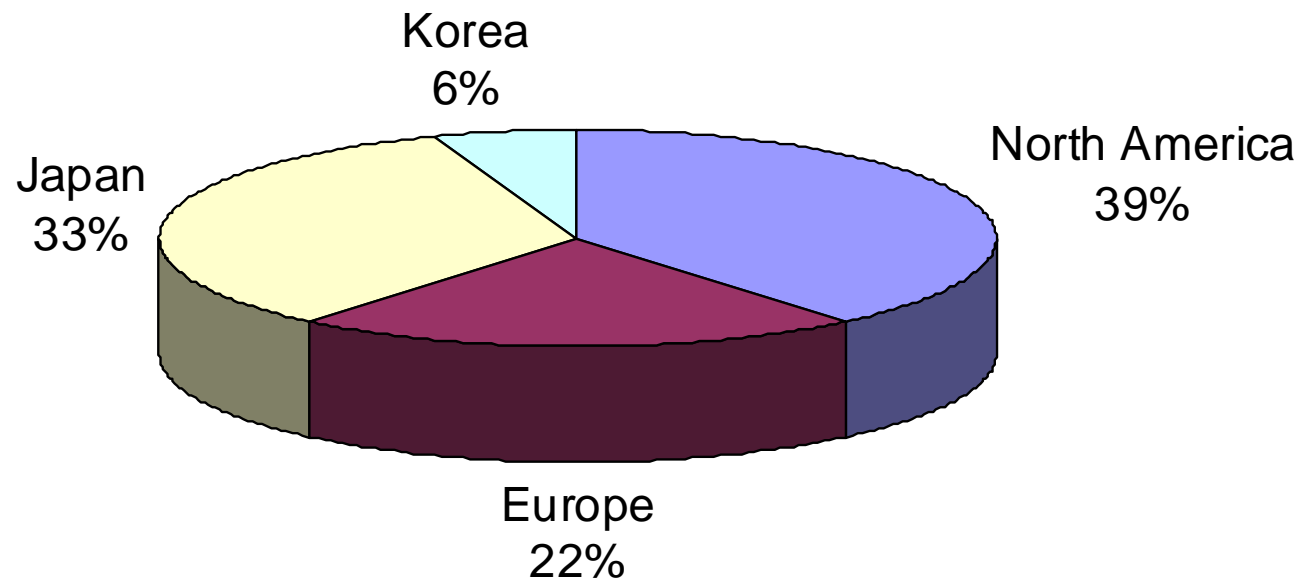
IEUVI Optics Contamination TWG,
Lake Tahoe, October 2, 2008



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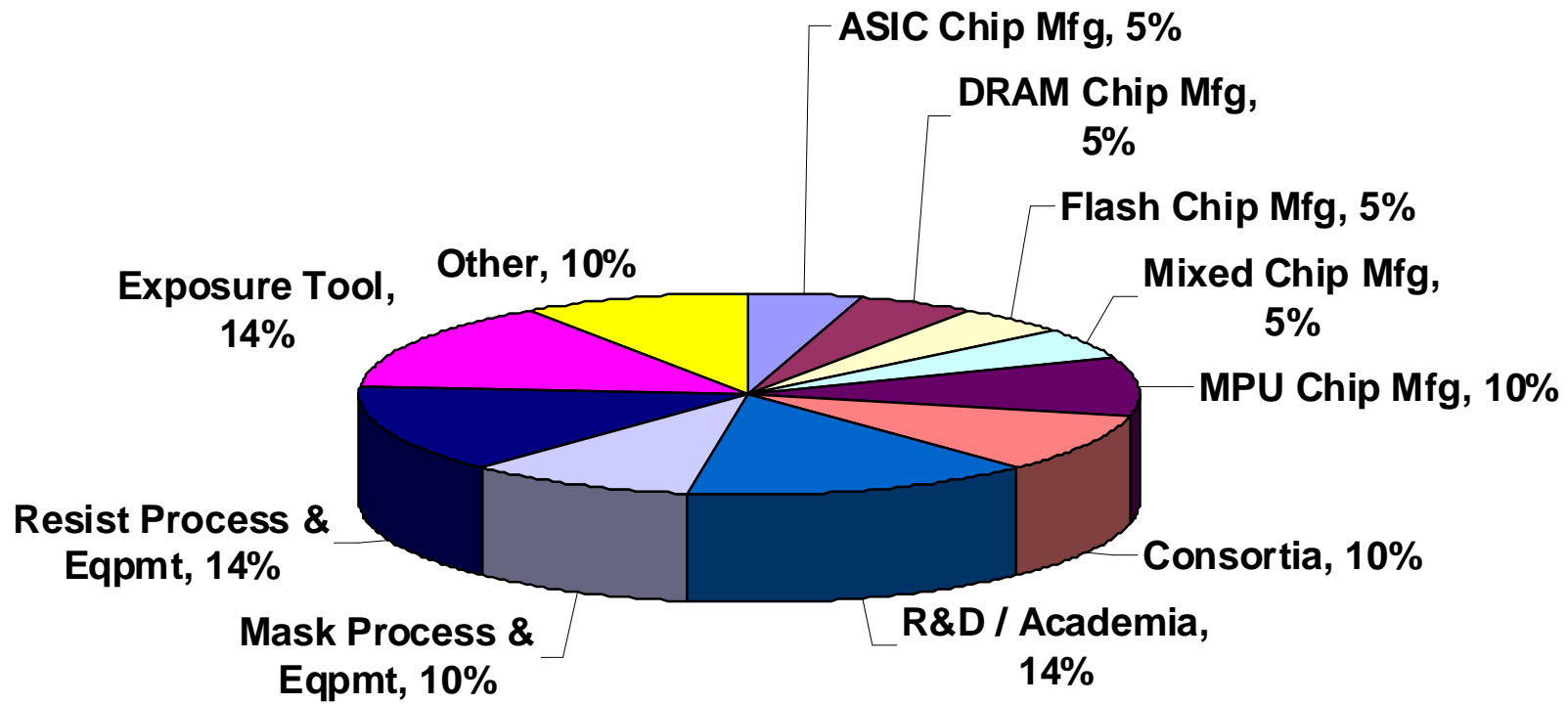
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Demographics

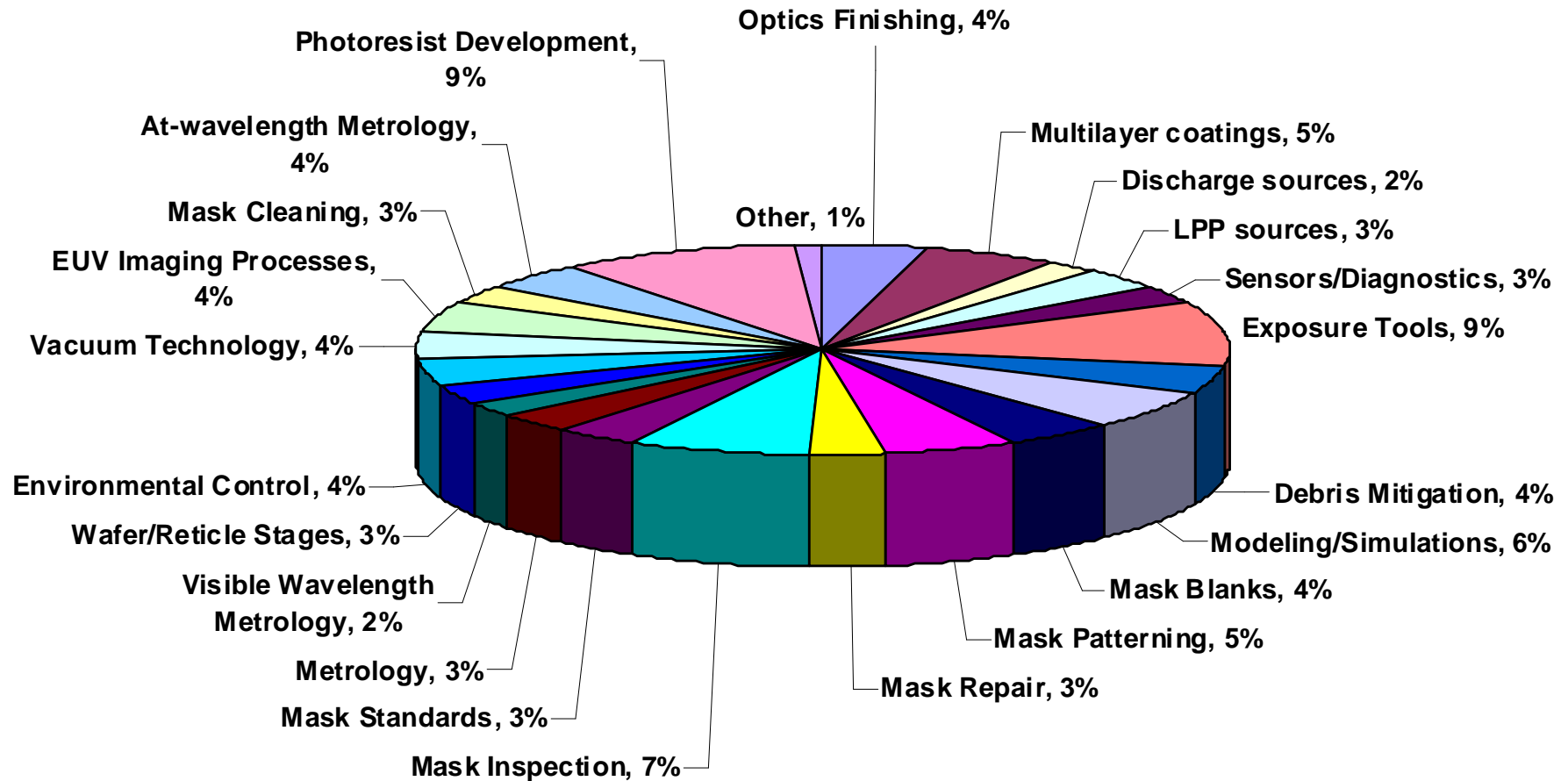


Total 18 responses

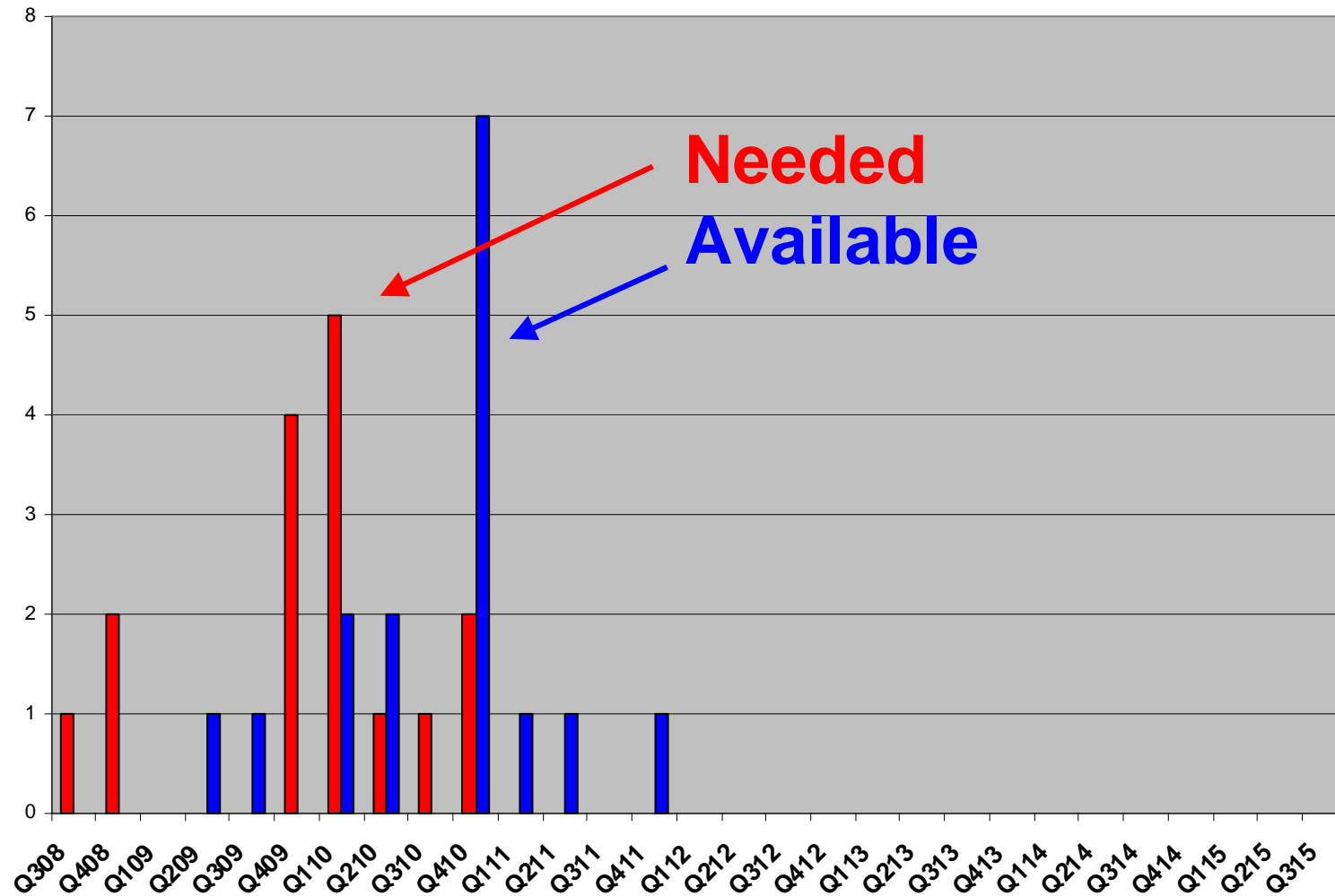
Product



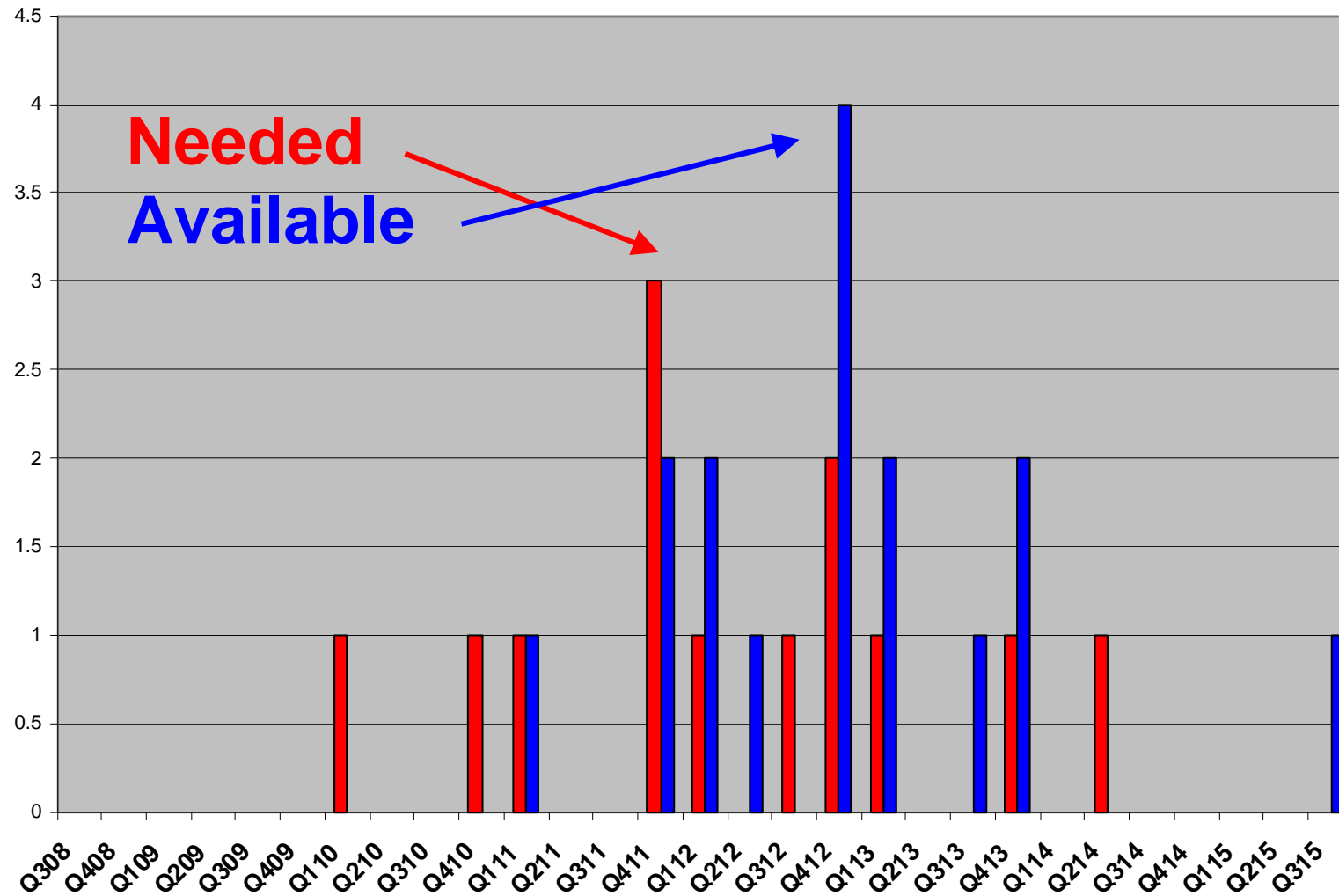
EUV Focus Areas



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/Red
3	Optics cleaning (in situ)	Yellow
4	Accelerated lifetime testing/understanding scaling laws	Orange/Red
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