



Accelerating the next technology revolution

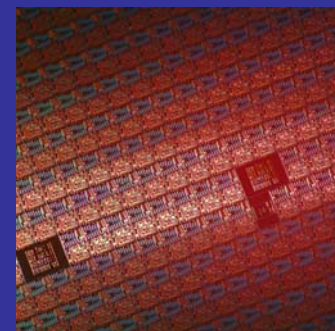
IEUVI Resist TWG

October 2, 2008

Focus Topic Intro: Optimizing RLS?



Jacque Georger - EUV Resist Project
Manager



EUV Resist RLS Targets

EUV Resist Specifications	32nm hp	22nm hp
Resolution (lines 1:1, nm)		
½ Pitch	32	22
MPU Gate	21	15
LWR (nm, 3σ)		
8% of MPU Gate	1.7	1.2
10% of DRAM HP	3.2	2.2
Photospeed, EUV(mJ/cm²)	10	10

Focus Topic Intro: Keys to Optimizing RLS in EUV?



- Control/Minimize Diffusion ($<hp$, $<L$, $>Es$)
 - Quencher & Acid: Q&A Diff. Lengths & Ratio, Q/A Loading
 - Dynamic Diff. Lengths: Q&A Diff. $>$ in Expose area Vs Un-Exposed
 - Processing bakes: $<$ PEB Temp & Time, $>$ PAB Temp
- Smaller or Dynamic Inhibiting Platforms ($<hp$, $\leq L$, $\sim Es$)
 - Inhibitors: $<Mw$, Tighter Mw distribution & Molecular distribution
 - Dynamic size Inhibitors: Large \rightarrow Small, or Small \rightarrow Large
- Increase Film Quantum Yield ($\sim hp$, $\sim L$, $<Es$)
 - PAG loading, Better Utilize available Secondary e-
- Develop ($\leq hp$, $<L$, $\leq \geq Es$)
 - Developer: Conc., Surface Energy, Organic, Additives
- Post Develop & Pattern Transfer ($\sim hp$, $\leq L$, $\sim Es$)
 - Resist Sliming/Smoothing: Dry Etch, Rinse?
 - Optimize Hard Mask & Substrate Transfer Etch for LER/LWR?
- Aerial Image Improvement ($<hp$, $<L$, $<Es$)
 - Higher NA & Brighter Source