

# IFST 2005 Lithography Panel

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Topics: ArF Immersion Lithography vs EUV Lithography

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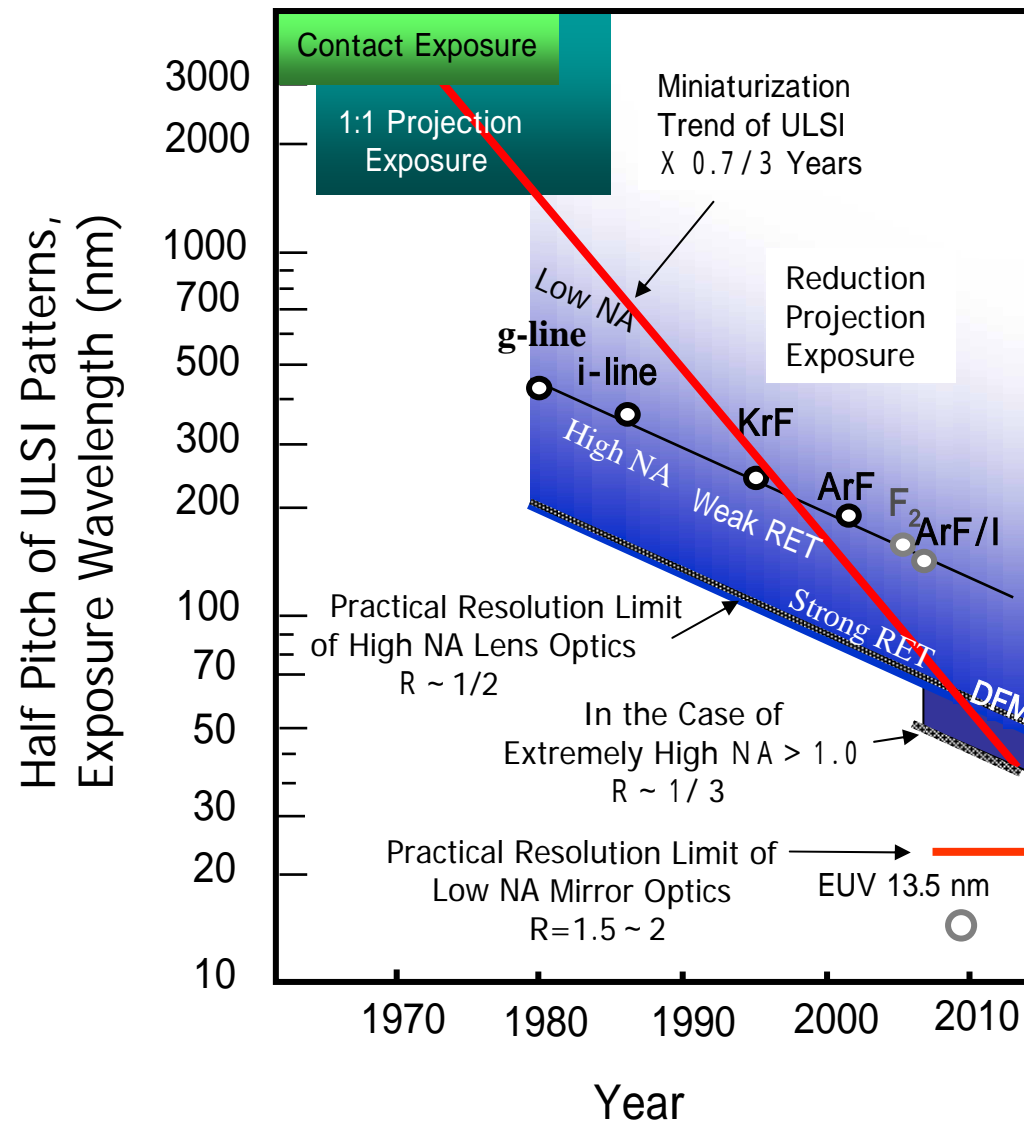
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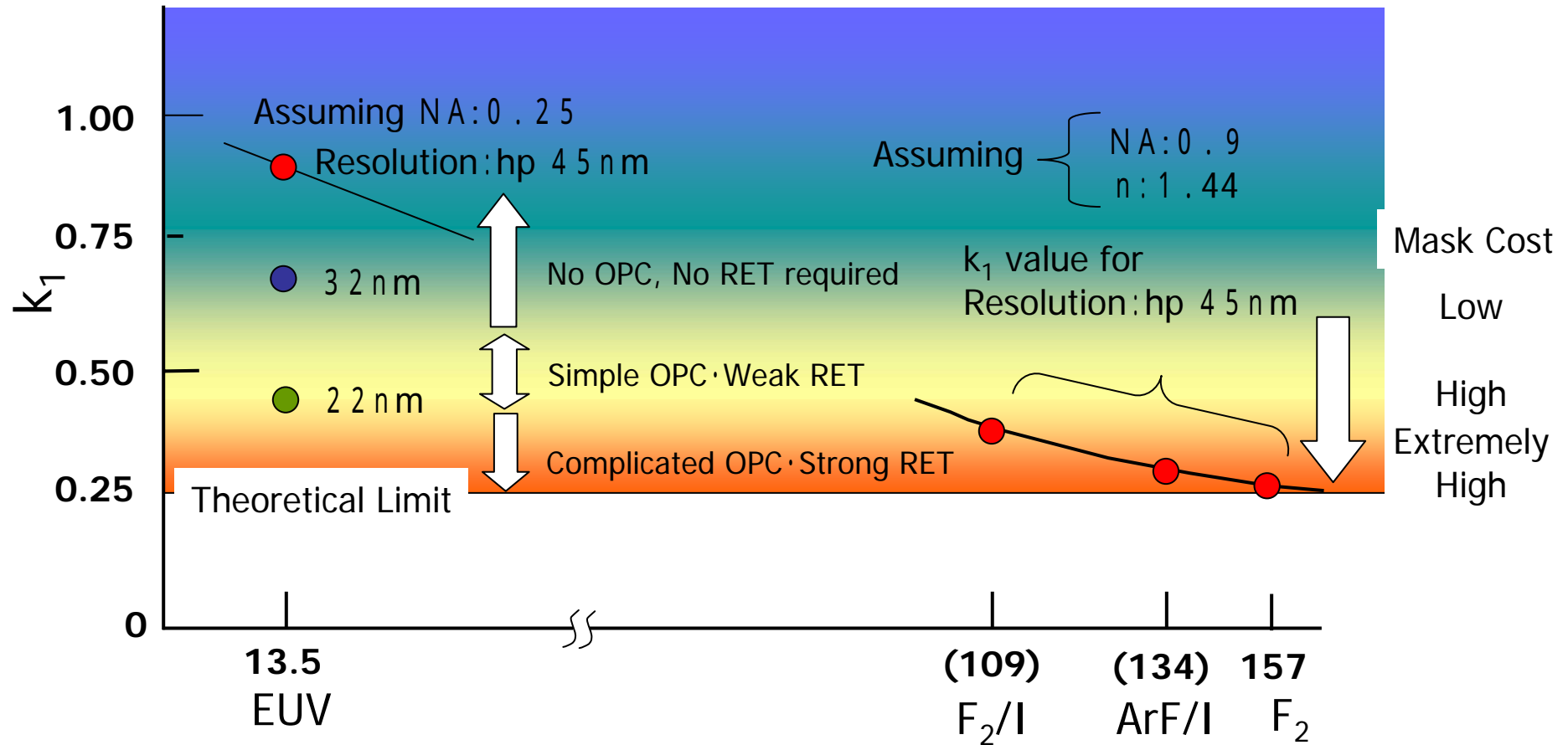
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# Miniaturization and Exposure Wavelength



# EUVL vs. Liquid Immersion Lithography

Cost and difficulty heavily dependent on  $k_1$  factor.  
Smaller  $k_1$  factor means higher exposure cost.



# ArF Liquid Immersion Lithography vs EUV Lithography

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## ArF Liquid Immersion Lithography for hp 45 nm and below.

**Pros:** It is like a Conventional Optical Lithography.  
Almost all the infrastructures already exist.

**Cons:** Ultra Low  $k_1$  Factor required.  
Lithography Friendly Design must be introduced.  
Multiple Exposure will be indispensable for  $k_1 < 0.3$   
Polarization effects must be considered.  
Extendibility will be a key issue.  
CoO and Resist LER will be critical Issues.

## EUV Lithography for hp 45 nm and below.

**Pros:** It uses Reduction Projection System.  
Extendibility to hp 22 nm will be expected.  
No complicated OPC and RET are required.  
Conventional design can be applied.

**Cons:** Total new infrastructures must be developed.  
Availability of the Defect-free Mask is the key issue.  
CoO and Resist LER will be critical Issues.