

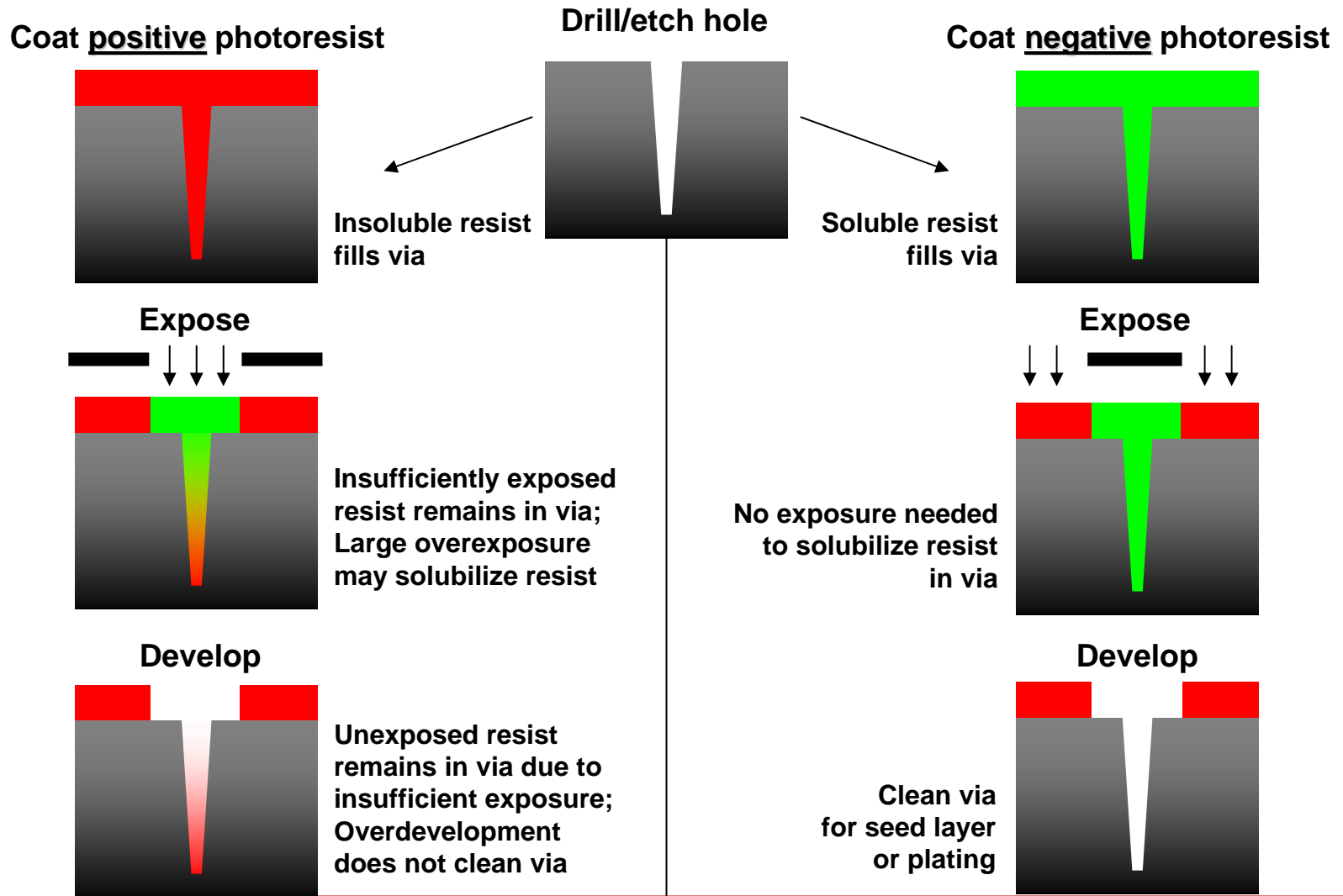


# AZ<sup>®</sup> 5nXT & 15nXT Series

## Chemically Amplified Negative Tone Photoresist for Cu RDL and TSV Plating/Etch

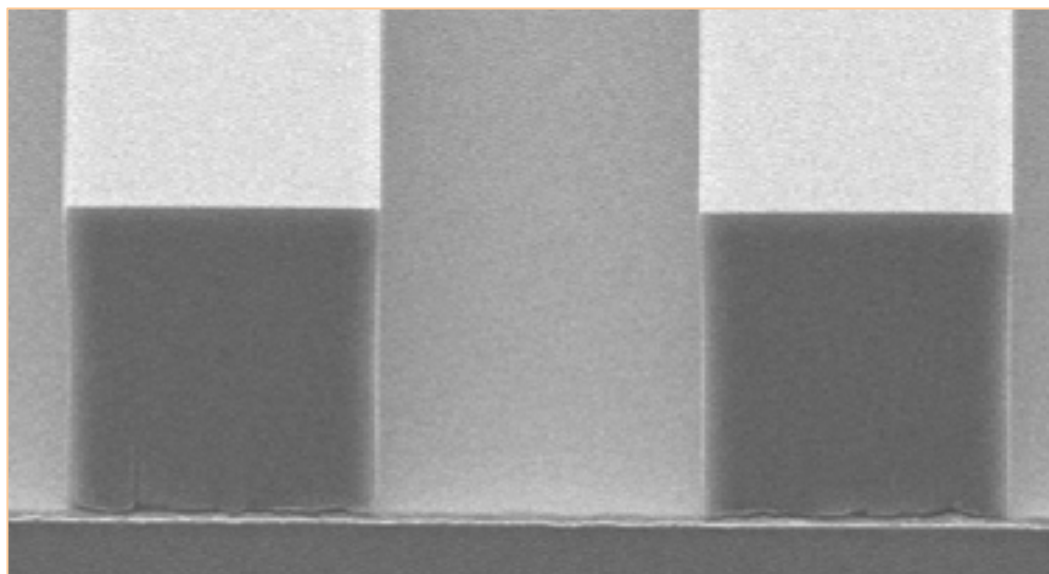
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# TSV: Advantages to Use a Negative Photoresist



# AZ<sup>®</sup> 5nXT / 15nXT Series

Primarily developed for Cu RDL and TSV definition.  
AHR Systems.

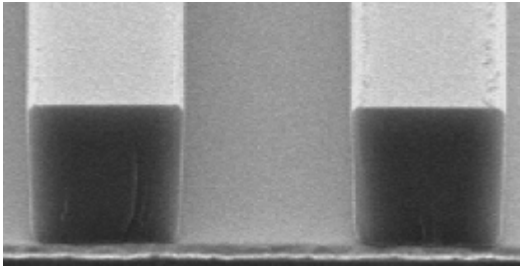


AZ 15nXT-N2  
CD = 10  $\mu\text{m}$   
Suss MA 200  
Dose: 400 mJ/cm<sup>2</sup>

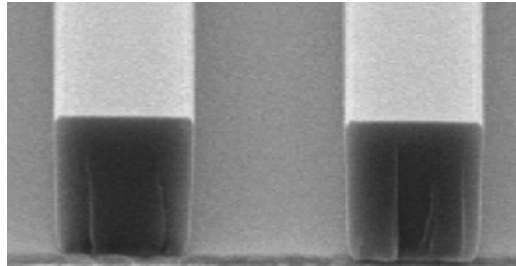
AZ<sup>®</sup> 15nXT covers a larger film thickness range than AZ<sup>®</sup> 5nXT.

# Performance of AZ<sup>®</sup> 5nXT

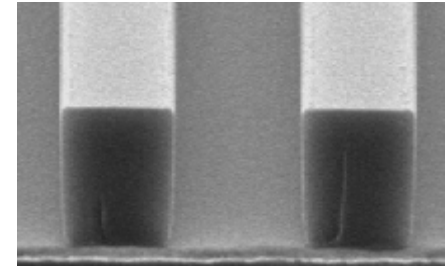
4  $\mu\text{m}$



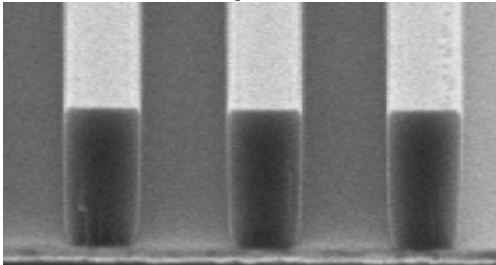
3.6  $\mu\text{m}$



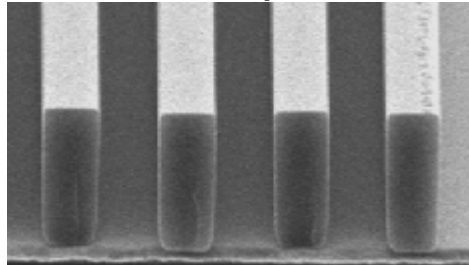
3  $\mu\text{m}$



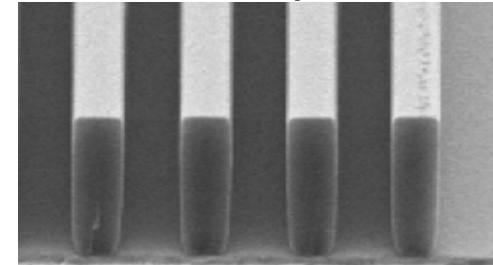
2  $\mu\text{m}$



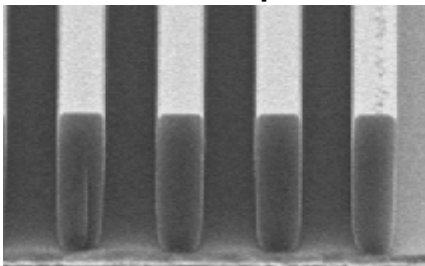
1.4  $\mu\text{m}$



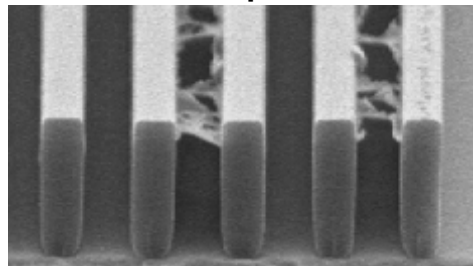
1.2  $\mu\text{m}$



1.1  $\mu\text{m}$



1  $\mu\text{m}$



Substrate: Copper 6"

Process conditions:

FT = 3.5  $\mu\text{m}$

Softbake = 110°C/120sec contact

PEB = 120°C/60 sec

Exposure: i-line stepper

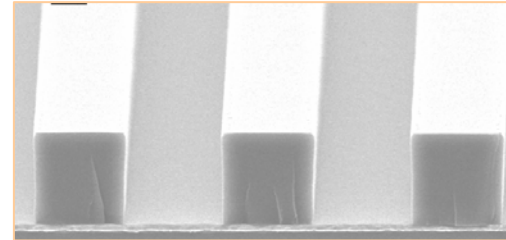
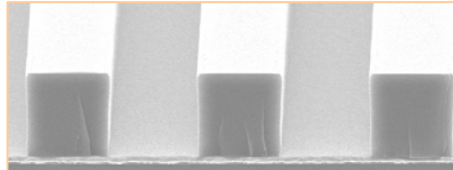
Development: 3 x 60 sec puddle;

AZ 300 MIF developer @ 23°C

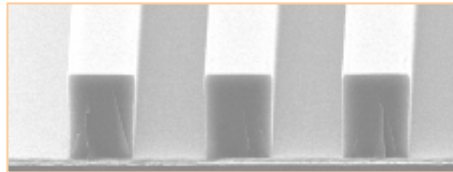
# AZ<sup>®</sup> 15nXT-N1 @ 5 $\mu$ m FT

## Resolution and Profiles

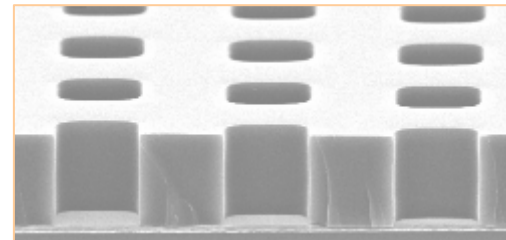
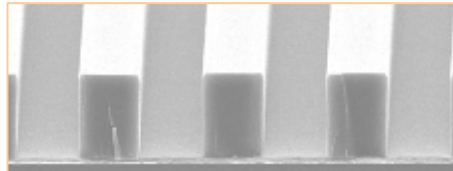
5  $\mu$ m



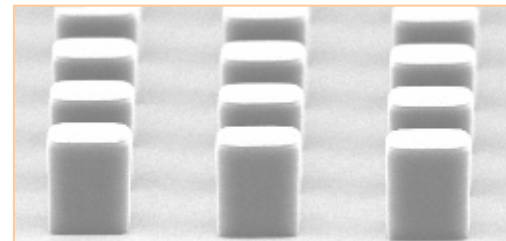
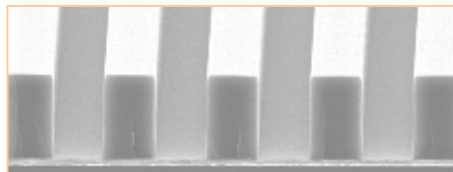
4  $\mu$ m



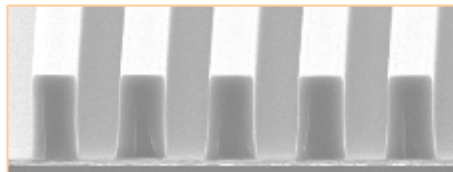
3.6  $\mu$ m



3.0  $\mu$ m

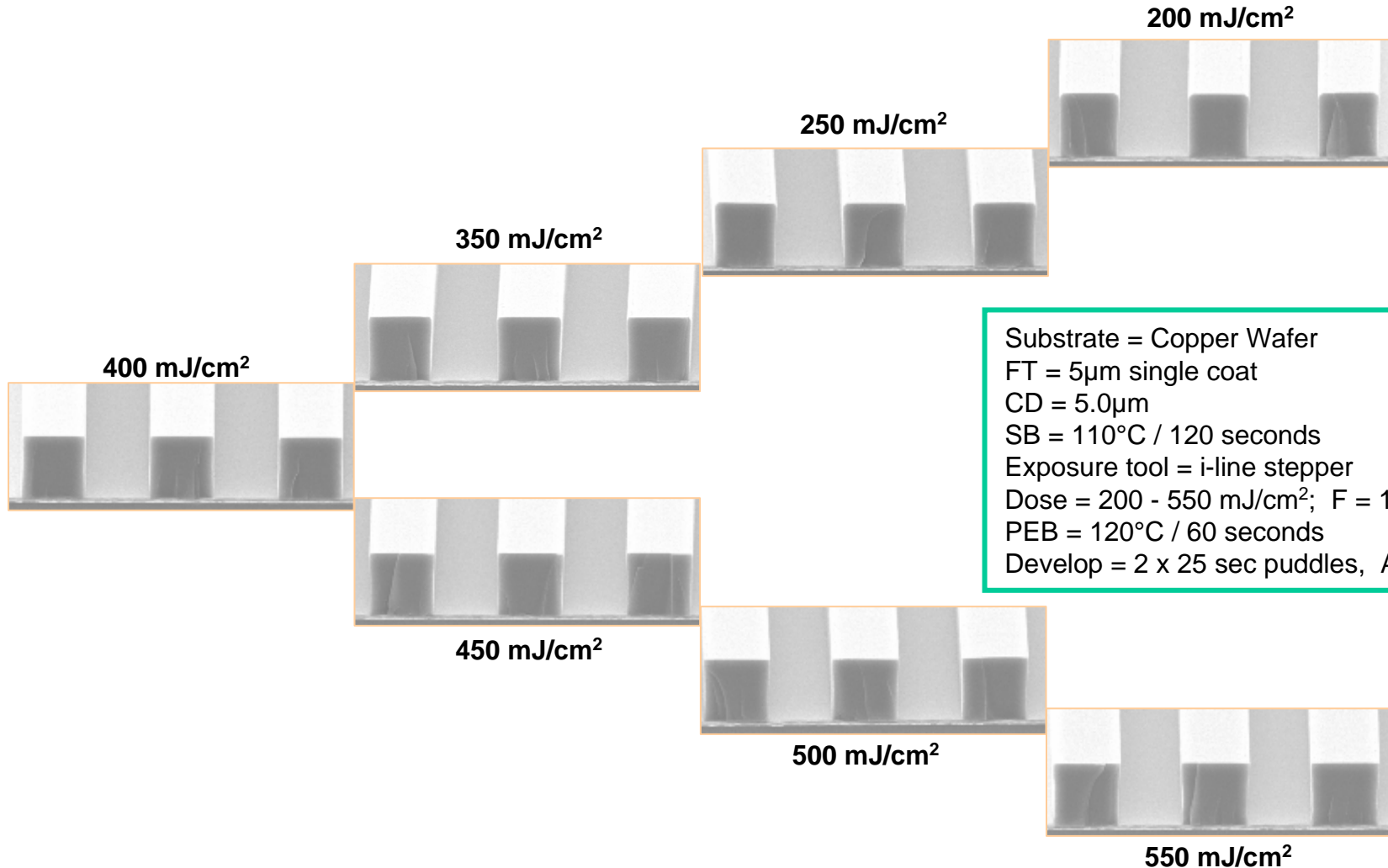


2.6  $\mu$ m



# AZ<sup>®</sup> 15nXT-N1 @ 5 $\mu$ m FT

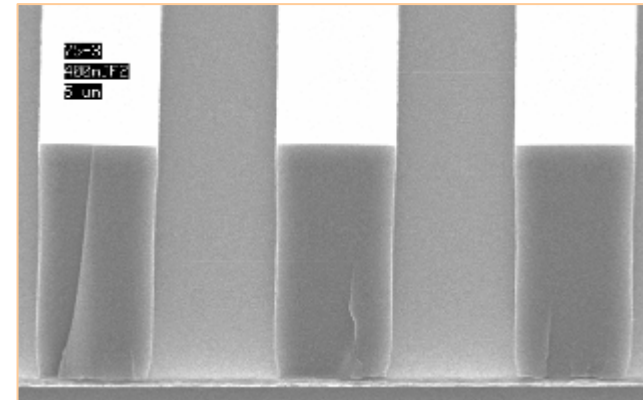
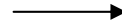
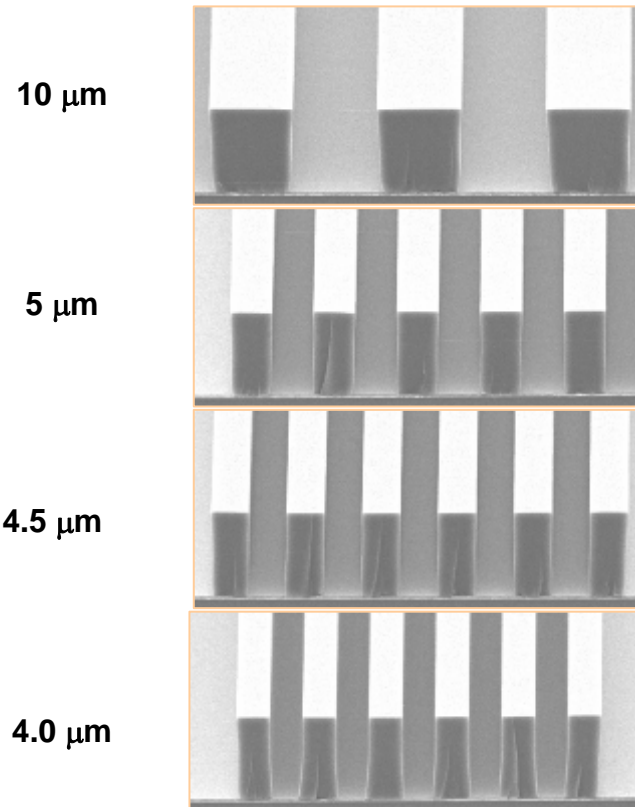
## Exposure Latitude



Substrate = Copper Wafer  
FT = 5 $\mu$ m single coat  
CD = 5.0 $\mu$ m  
SB = 110°C / 120 seconds  
Exposure tool = i-line stepper  
Dose = 200 - 550 mJ/cm<sup>2</sup>; F = 1.5  $\mu$ m  
PEB = 120°C / 60 seconds  
Develop = 2 x 25 sec puddles, AZ 300 MIF

# AZ<sup>®</sup> 15nXT-N1 @ 10 $\mu$ m FT

## Resolution and Profiles

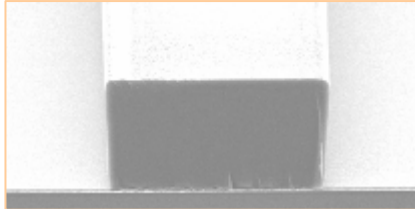


Substrate = Cu Wafer  
FT = 10  $\mu$ m by single coat  
SB = 110°C / 180 seconds  
Exposure tool = i-line stepper  
Dose = 400 mJ/cm<sup>2</sup>; Focus = 2 $\mu$ m  
PEB = 120°C / 60 seconds  
Develop = 2 x 60 sec puddles, AZ 300 MIF

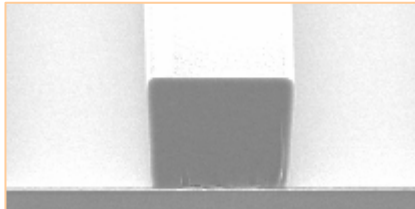
# AZ<sup>®</sup> 15nXT-N1

## Performance on Suss MA 200

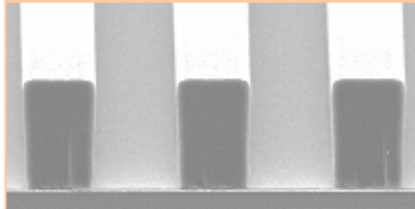
30  $\mu\text{m}$



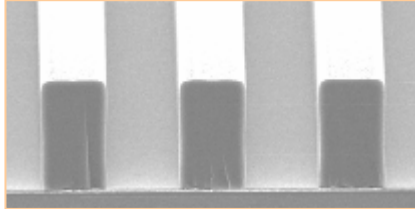
20  $\mu\text{m}$



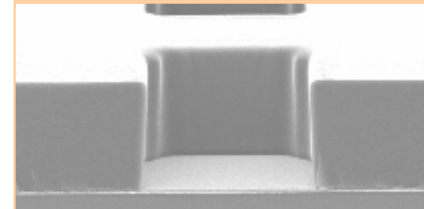
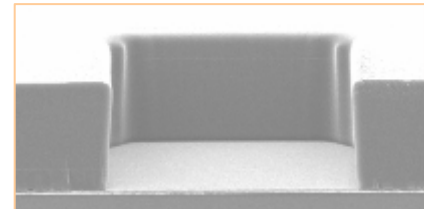
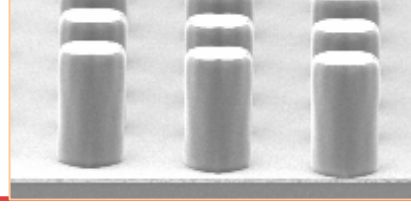
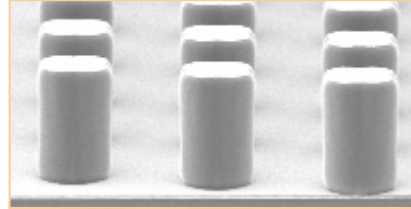
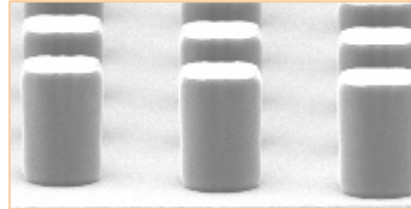
10  $\mu\text{m}$



9  $\mu\text{m}$



8  $\mu\text{m}$

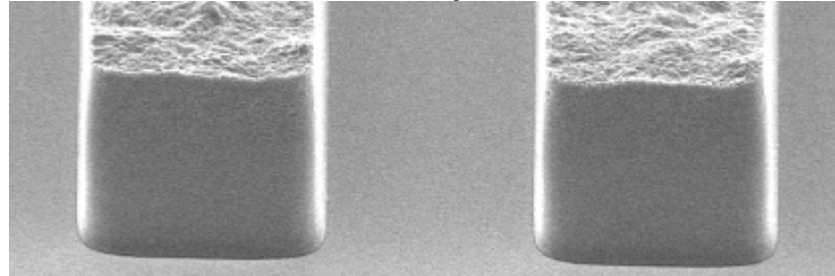


FT = 15  $\mu\text{m}$   
Suss MA 200 g-h-i  
Dose = 1000 mJ/cm<sup>2</sup>

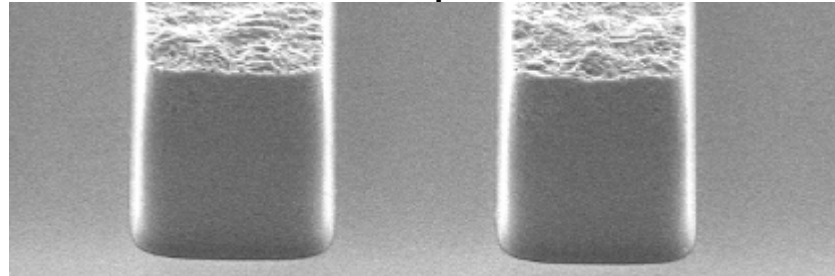
# AZ<sup>®</sup> 15nXT-N1

## Cu Plating Performance

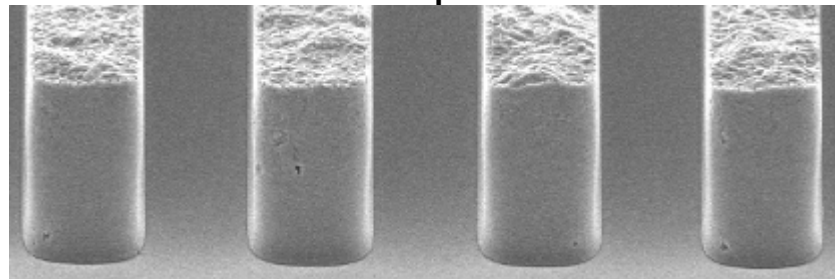
10  $\mu\text{m}$



8  $\mu\text{m}$



5  $\mu\text{m}$



# AZ<sup>®</sup> 5nXT / 15nXT Series

## Performance Highlights

### AZ<sup>®</sup> 5nXT

- ▲ For use on Cu type substrates
- ▲ Film thickness range 3  $\mu\text{m}$  – 10  $\mu\text{m}$
- ▲ Competitive photospeed (400 - 1000 mJ/cm<sup>2</sup>)
- ▲ Excellent adhesion, no underplating
- ▲ Easy strip (AZ<sup>®</sup> 400T - 4 min @ 80°C)
- ▲ Very good cost of ownership

### AZ<sup>®</sup> 15nXT

- ▲ Chemistry extension of AZ<sup>®</sup> 5nXT
- ▲ Less undercut on Cu than AZ<sup>®</sup> 5nXT at higher film thickness range > 10  $\mu\text{m}$
- ▲ Can be used as permanent resist
- ▲ Formulation optimization still in progress