



長興材料

ETERNAL MATERIALS

Elements of Infinite Possibilities



ICS

FPC

ENIG

PCB

HDI

ABF

IC Packaging

ETERTEC® UDF3300

LDI DRY FILM PHOTORESIST

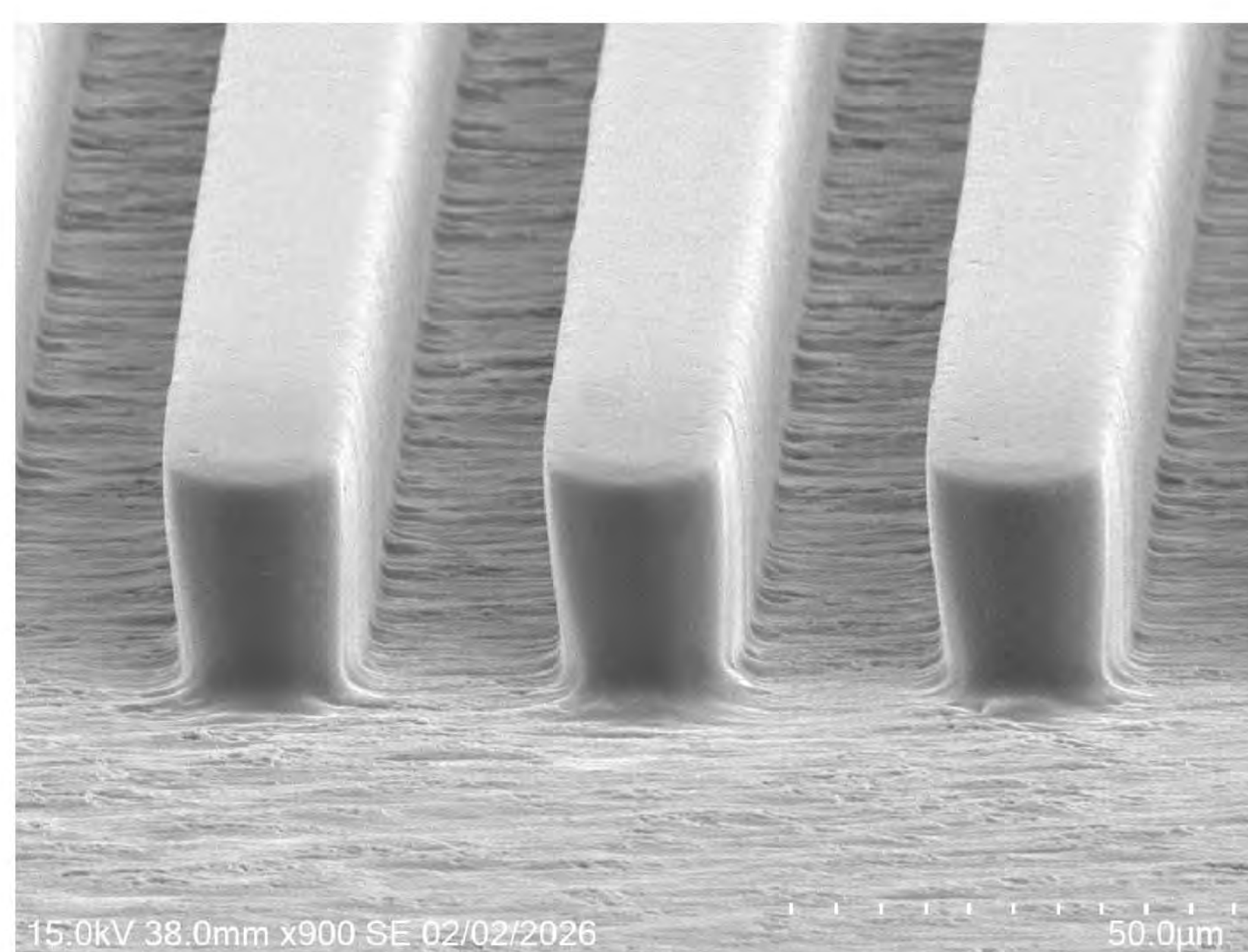
HDI

FEATURES

- Designed for UV laser direct imaging applications
- For i-line and h-line
- Good tenting ability
- High resolution and adhesion

特性

- 針對雷射曝光製程設計
- 適用i-line與h-line波長
- 優良蓋孔能力
- 優良線路解析度及附著力



UDF3325 L/S=20 / 20 μm (h-line)

CHARACTERISTICS

| Item | UDF3325 | |
|--|------------------|------------------|
| Thickness (μm) | 24 | |
| Wavelength | i-line | h-line |
| Exposure Energy (mj/cm ²) | 15 ^{*1} | 16 ^{*2} |
| 41 STOUFFER STEP HELD | 16 | 16 |
| Minimum Developing Time x2 (sec) ^{*2} | 29 | 29 |
| Adhesion (μm) | 20 | 18 |
| Resolution (μm) | 20 | 18 |
| Tent Ability (via φ mm) | 4 | |

*1: Test by Nuvogo 800, *2: ADTEC. *2: 50 % BP, 28 °C



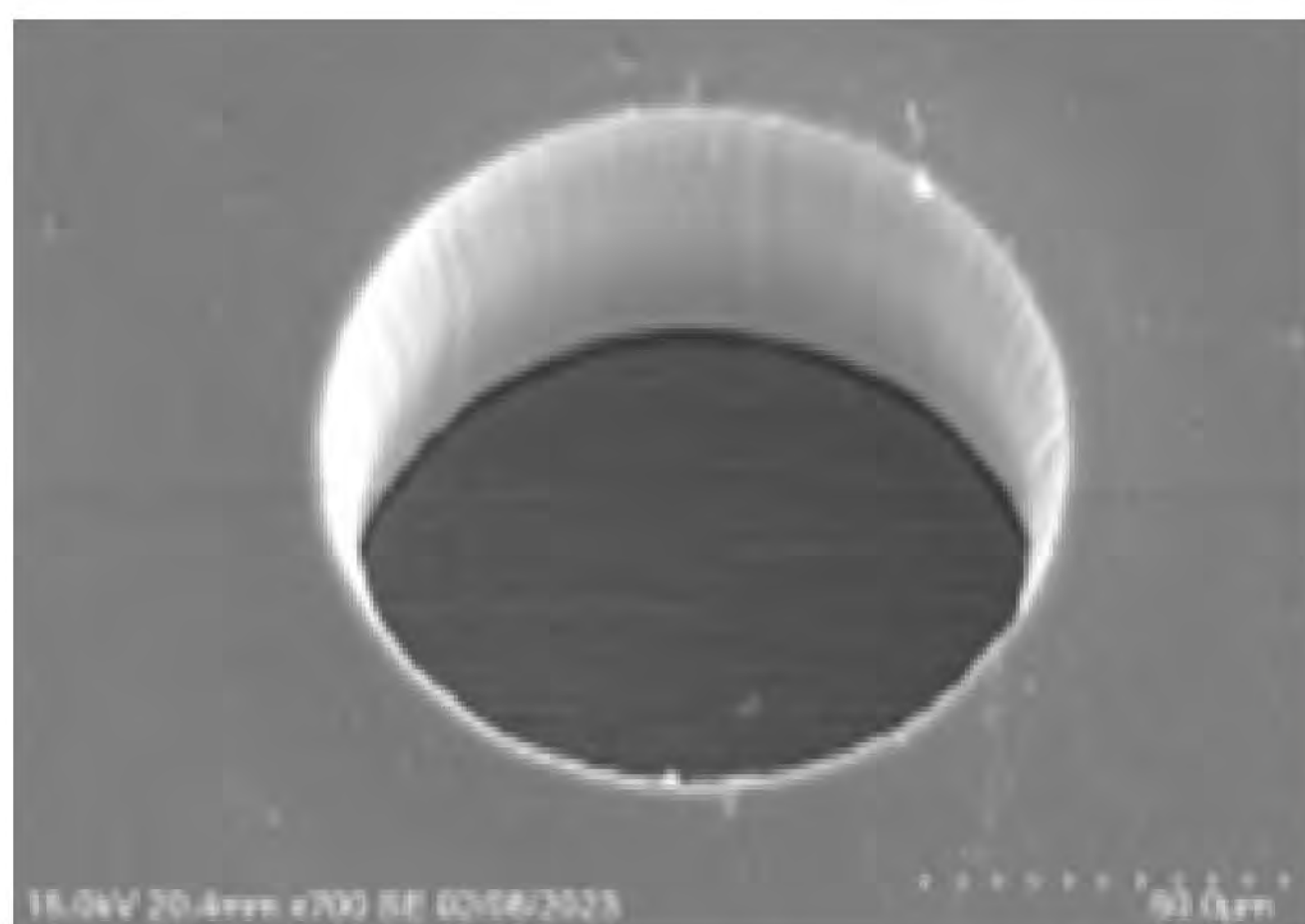
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Dry Film Photoresist for Copper Pillar Bump Application

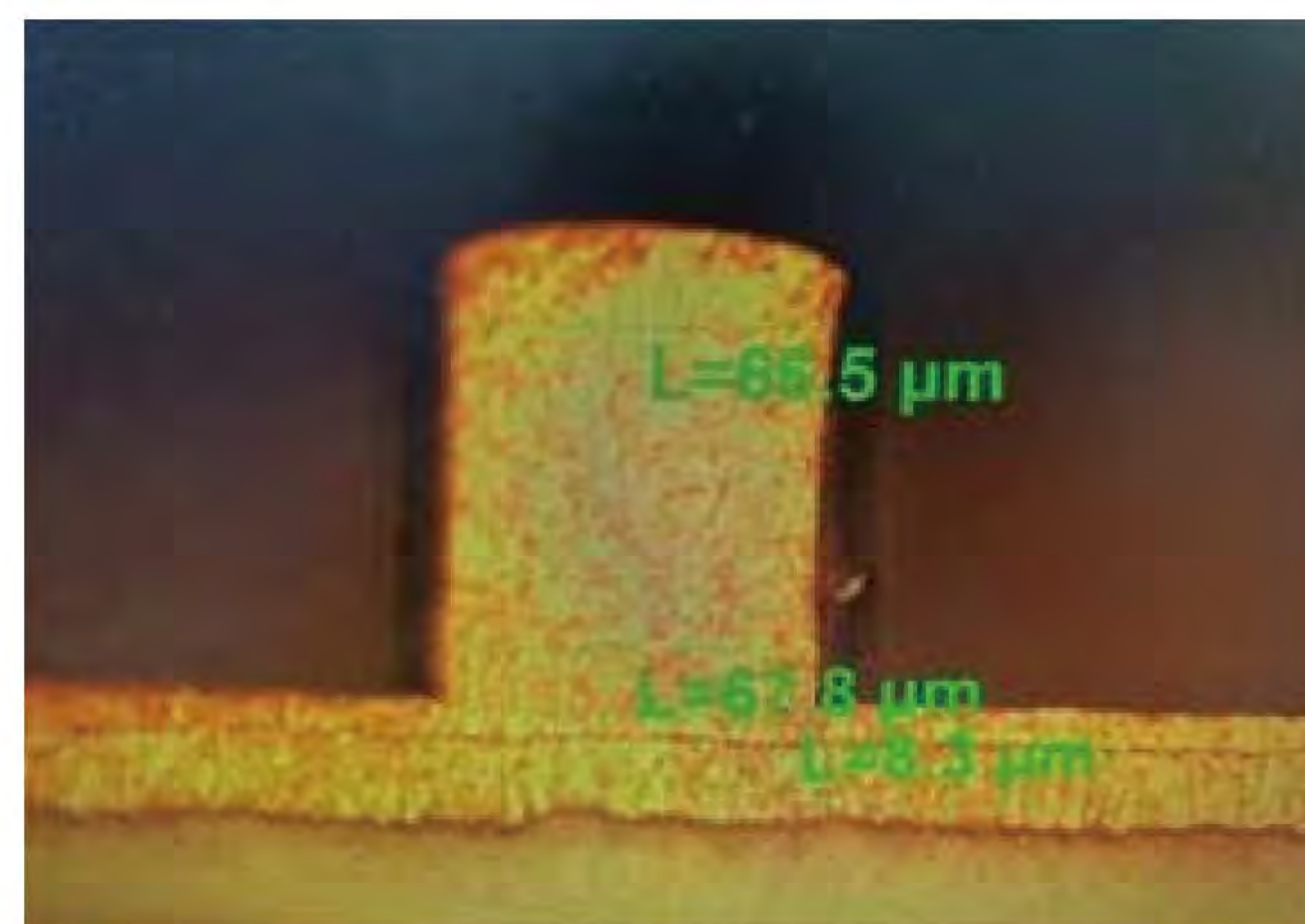
BR41000 / BR42000

BR41120
Direct Imaging
(Single-Wavelength, i-line)

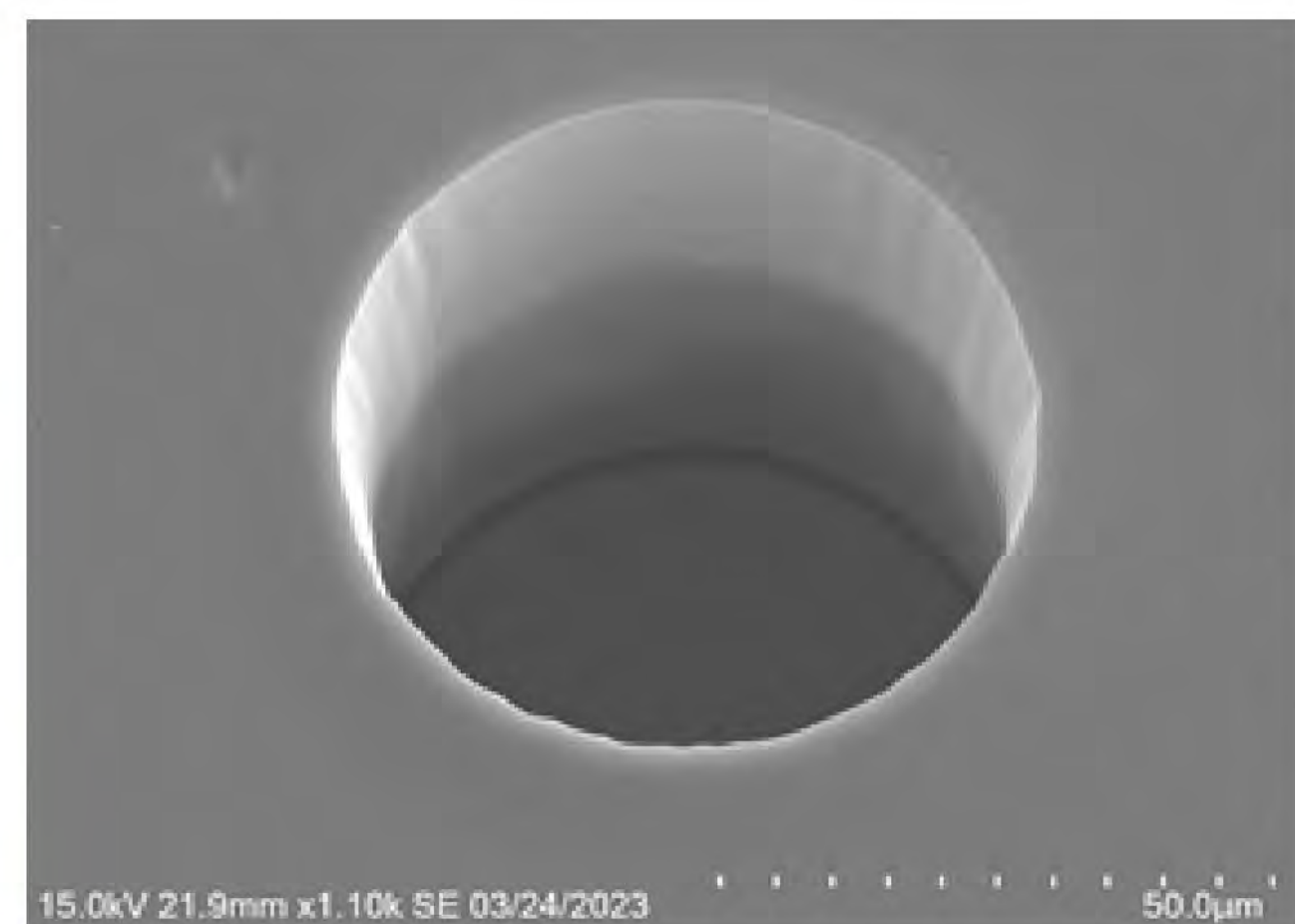
BR42240
Stepper / Aligner
(Multi-Wavelength/Broad Band)



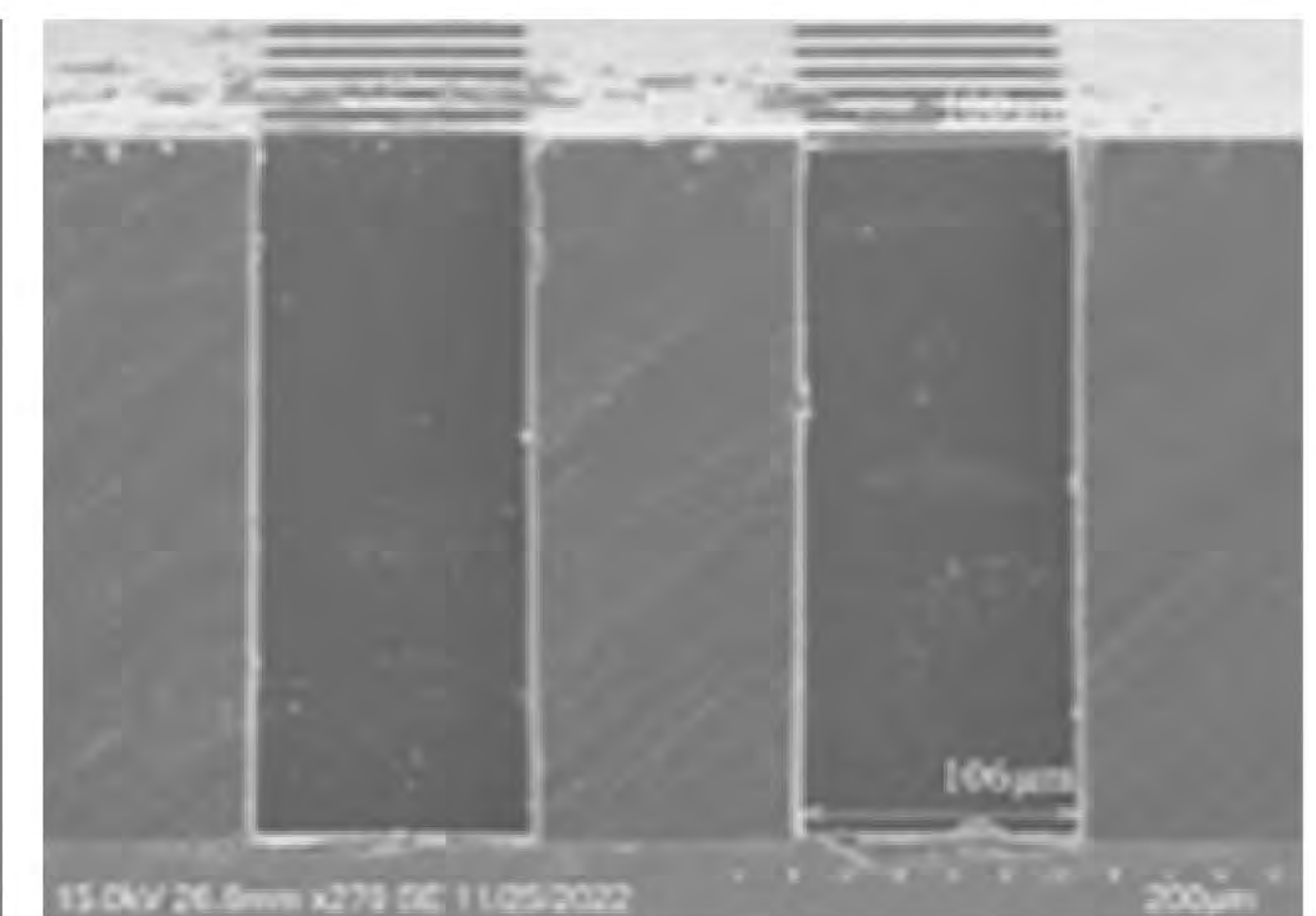
Via Resolution 60 μm



Perpendicularity
98.8%
After copper plating



Via Resolution 80 μm



CHARACTERISTICS

| DF | BR41120 | BR42240 |
|-----------------------------|-----------------------------|-----------------------------|
| DF Thickness | 120 μm | 240 μm |
| Photo Speed | 500 mj/cm^2 | 220 mj/cm^2 |
| Minimum Developing Time x 2 | 2 min 16 sec | 5 min 16 sec |
| Via Resolution (Φ) | 60 μm *1 | 80 μm *2 |

*1 Nuvogo LDI, i-line *2 Ushio Projection, i-line

Advantages

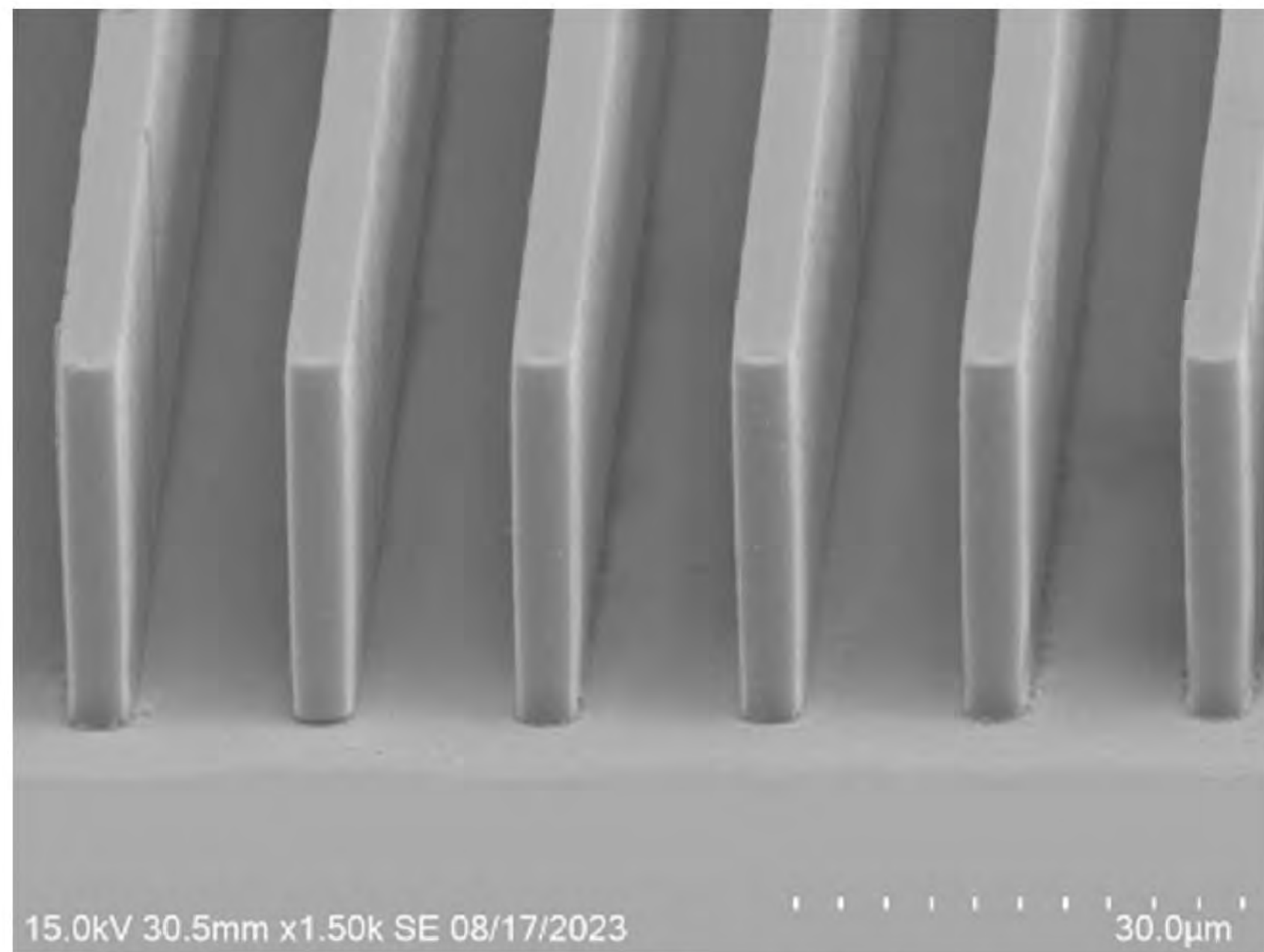
1. Good via resolution
2. Good resistance to acid plating
3. Faster stripping & small flake size
4. Good dissolvability to specific stripping chemistry



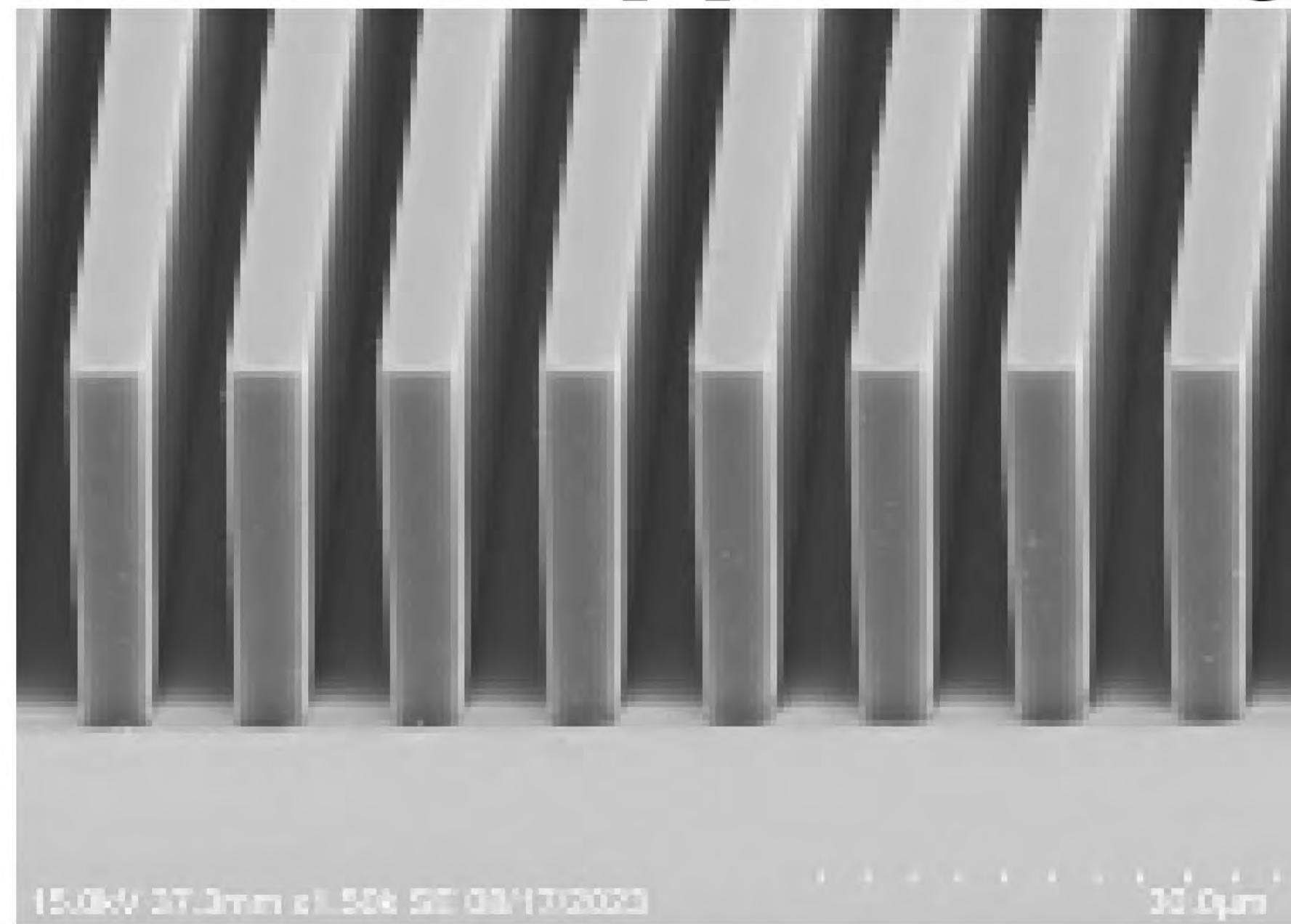
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Dry Film Photoresist for IC Packaging Application APR900 / UDH5700

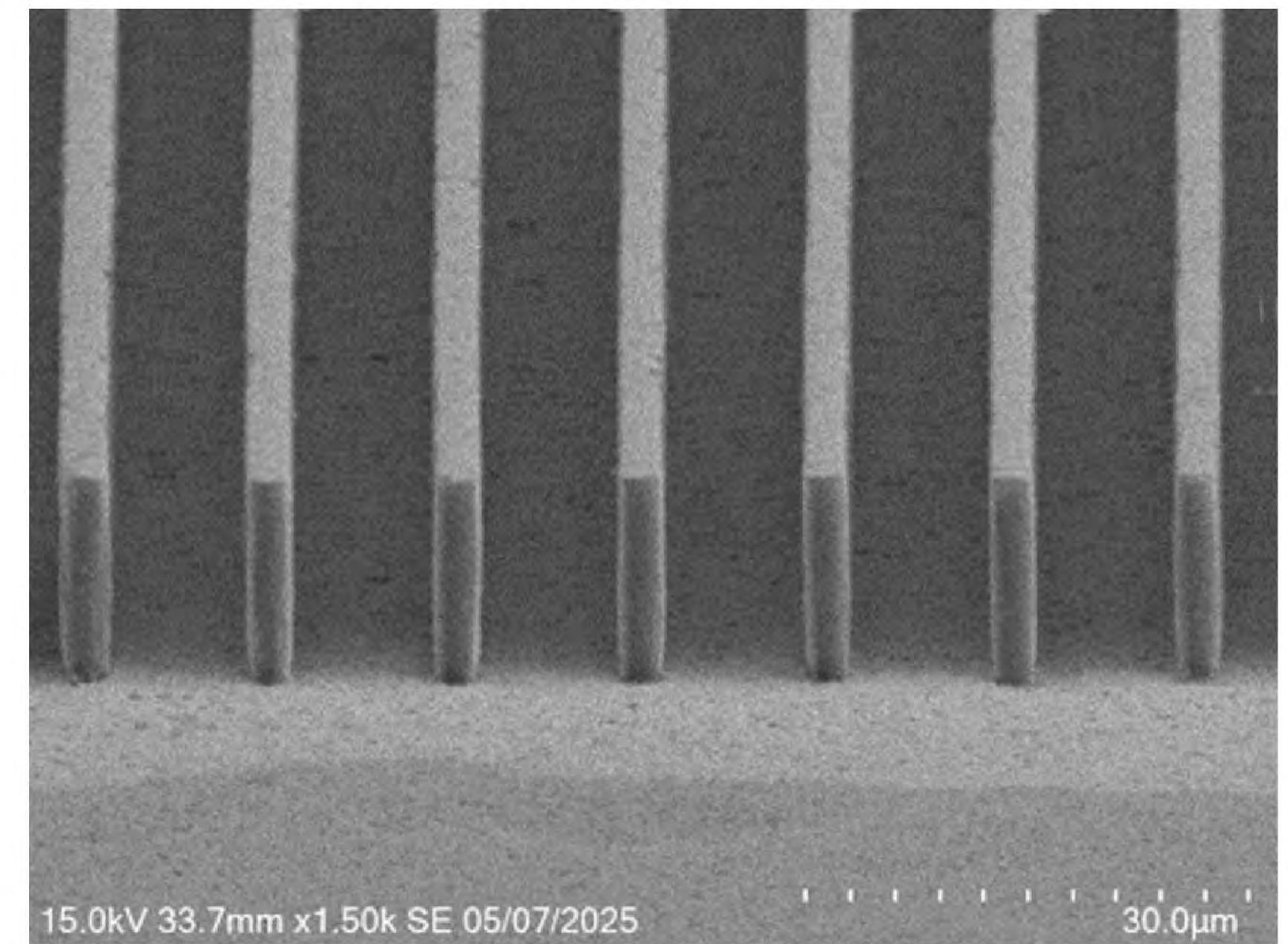
APR900 Stepper / Aligner SAP



APR910 L/S 4/16 μm

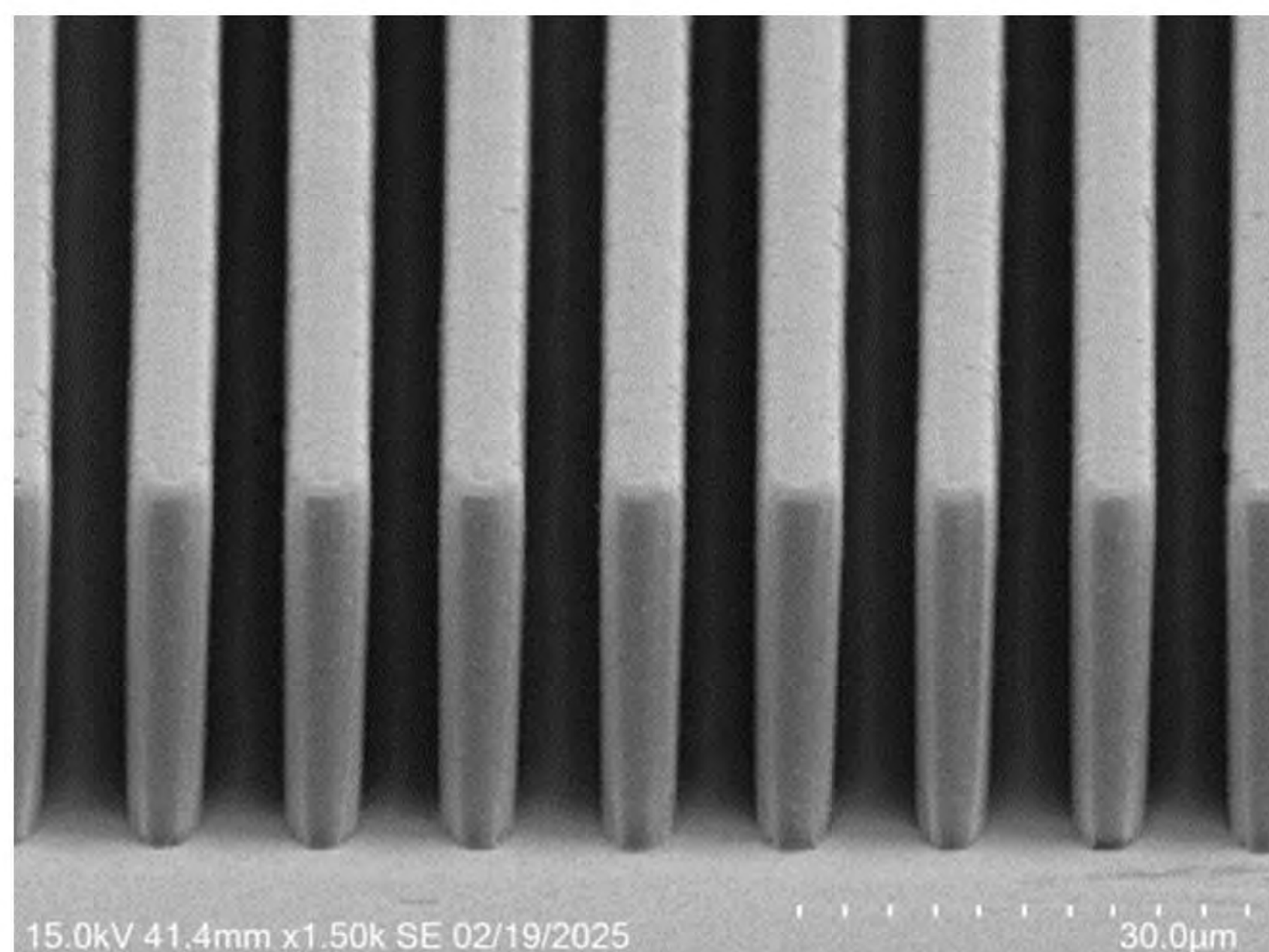


APR910 L/S 4.5/4.5 μm

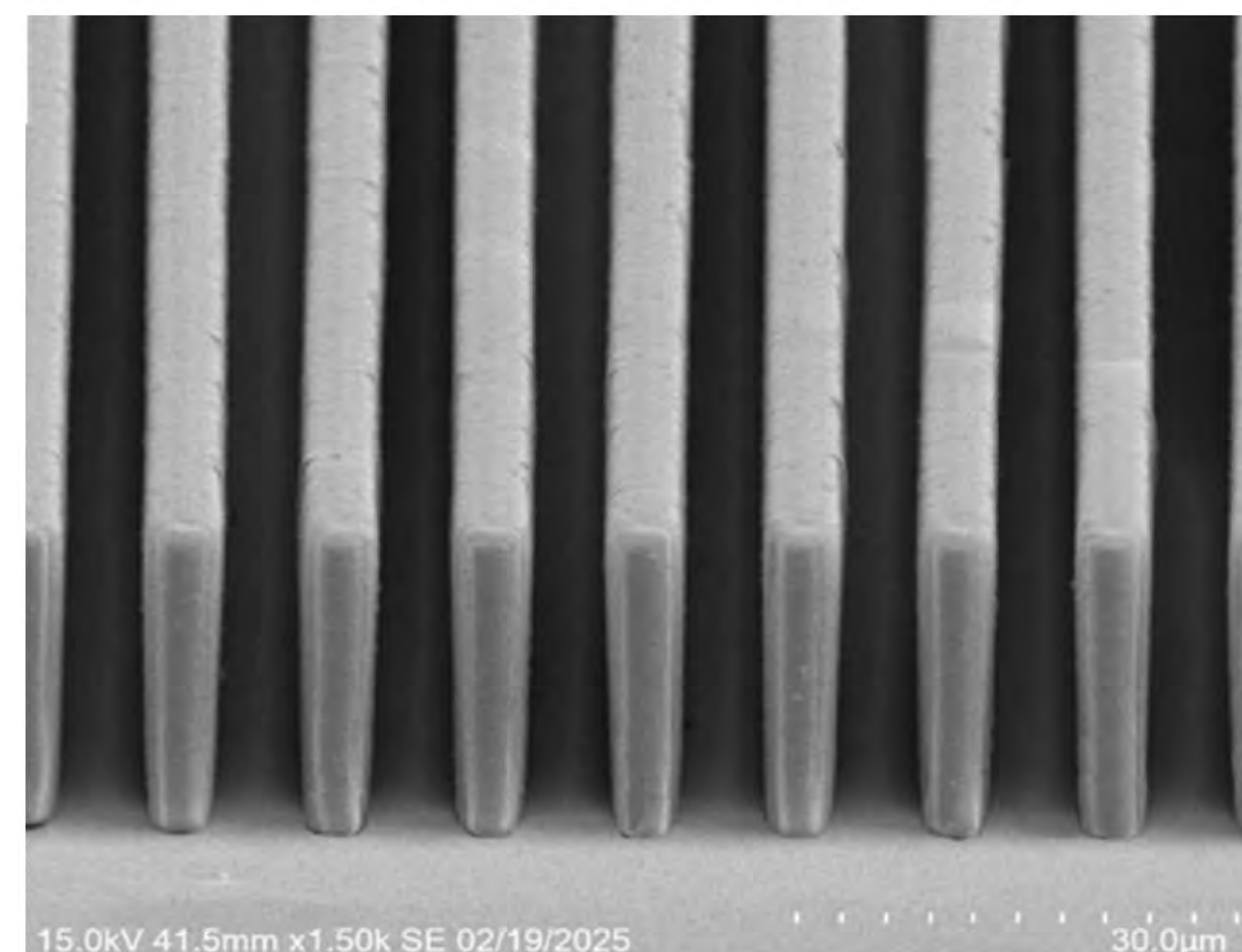


APR906 L/S 2.5/10 μm

UDH5700 Direct Imaging mSAP



UDH5725 L/S 5/5 μm



UDH5715 L/S 4/4 μm

CHARACTERISTICS

| DF | APR910 | APR906 | UDH5725 | UDH5715 |
|-----------------------------|------------------------|------------------------|-----------------------|-----------------------|
| DF Thickness | 24 μm | 15 μm | 25 μm | 15 μm |
| Photo Speed * | 175 mj/cm ² | 160 mj/cm ² | 60 mj/cm ² | 60 mj/cm ² |
| 41sst | 16 | 16 | 13 | 13 |
| Minimum Developing Time x 2 | 43 sec | 26 sec | 36 sec | 27 sec |
| Adhesion / Resolution | 4 / 4.5 μm | 2.5 / 2.5 μm | 5 / 5 μm | 4 / 4 μm |

*Ushio Projection Aligner

*ADTEC, h-line

Advantages

1. Excellent adhesion & resolution
2. Excellent resistance to acid plating
3. Good sidewall profile



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ALPHO® ドライフィルムフォトレジスト 超ファインエッチング対応ALPHO® LDF500Fシリーズ

For
DI / LDI

For Super fine etching process ALPHO® LDF500F series

特長 Features

- 半導体パッケージ基板/高密度多層基板の内層用パターンかつエッチングプロセスに適したドライフィルムフォトレジストです。高解像、高密着、小径テント性によりファインパターン形成に貢献します。
Dry Film Photo Resist suitable for HDI and FPC manufacturing process. Contribute to high yield ratio and productivity by its high photosensitivity, high resolution and high conformance to base materials.

使用例 Applications

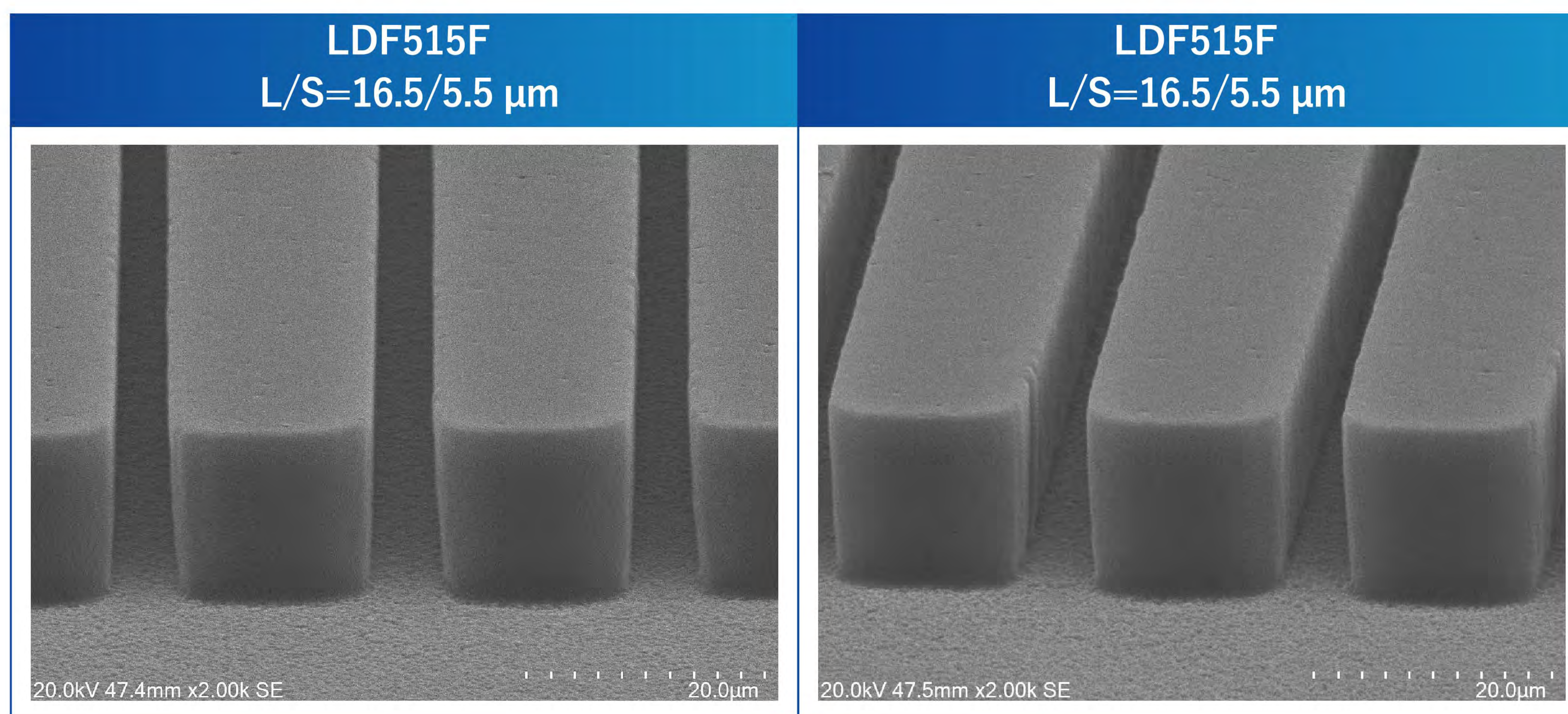
- 半導体パッケージ基板、HDI基板、プローブ基板、高多層基板
IC-Substrate, HDI, FPC, MLB Inner Etching
- 各種ダイレクトイメージング露光機対応
Various Direct Imaging (DI) Exposure System

レジスト特性 Resist performance

| Dry film | LDF510F | LDF515F | LDF529F |
|--|---------|---------|---------|
| レジスト厚 Resist Thickness (μm) | 10 | 15 | 29 |
| 最少現像時間*1 Minimum Developing Time (sec.) | 10 | 15 | 30 |
| 露光量*2 Exposure Energy (mJ/cm ²) | 68 | 72 | 75 |
| 解像密着性 Resolution and Adhesion L/S=x/x (μm) | 5.5 | 6.5 | 10 |
| 細線密着性 Adhesion L/S=x/9x (μm) | 5 | 6 | 9 |

※1 現像条件 (Developing condition) : 0.7%Na₂CO₃, 27°C, BP x 2

※2 DI露光 (Direct imaging exposure) : h-line DI Machine

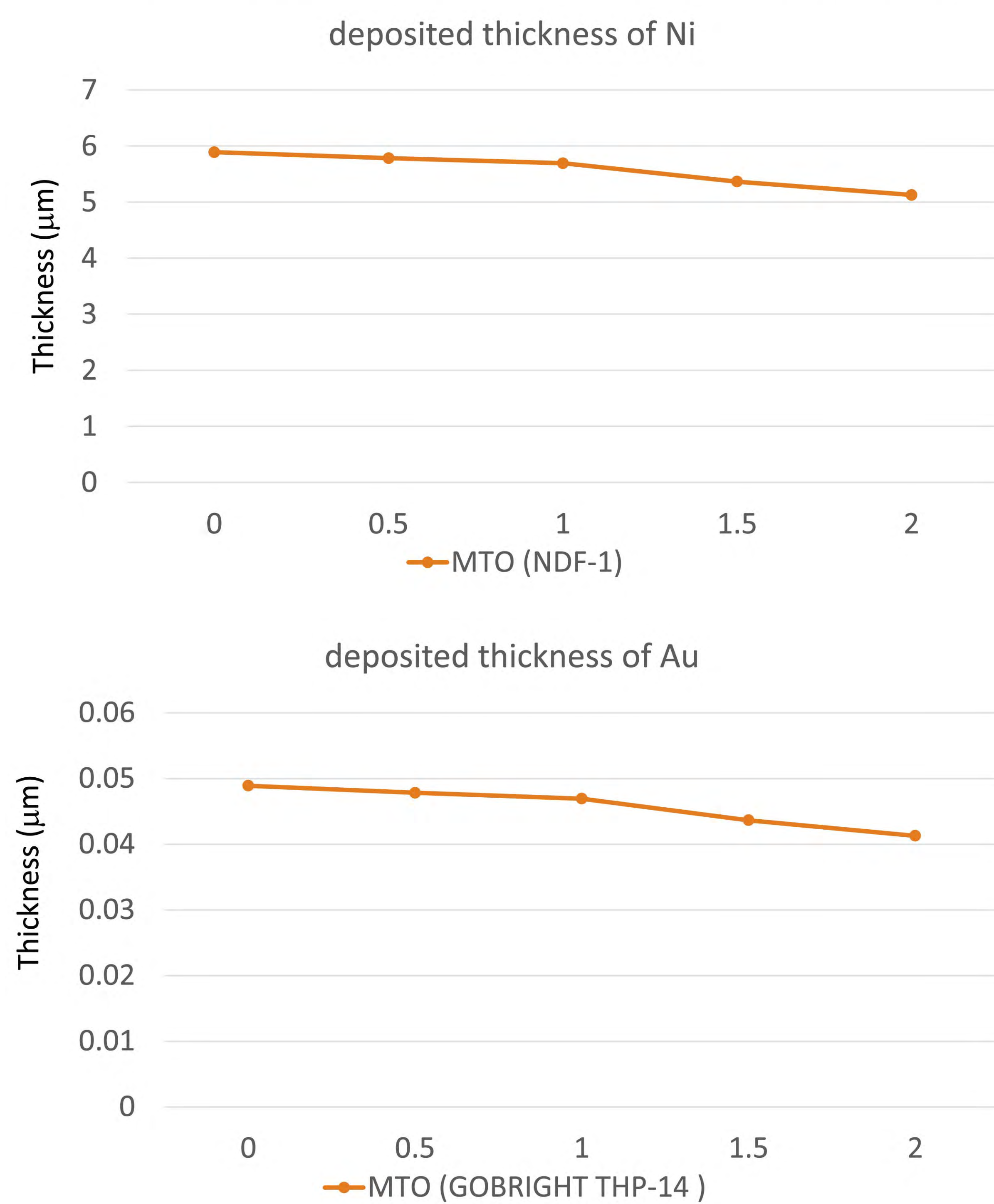


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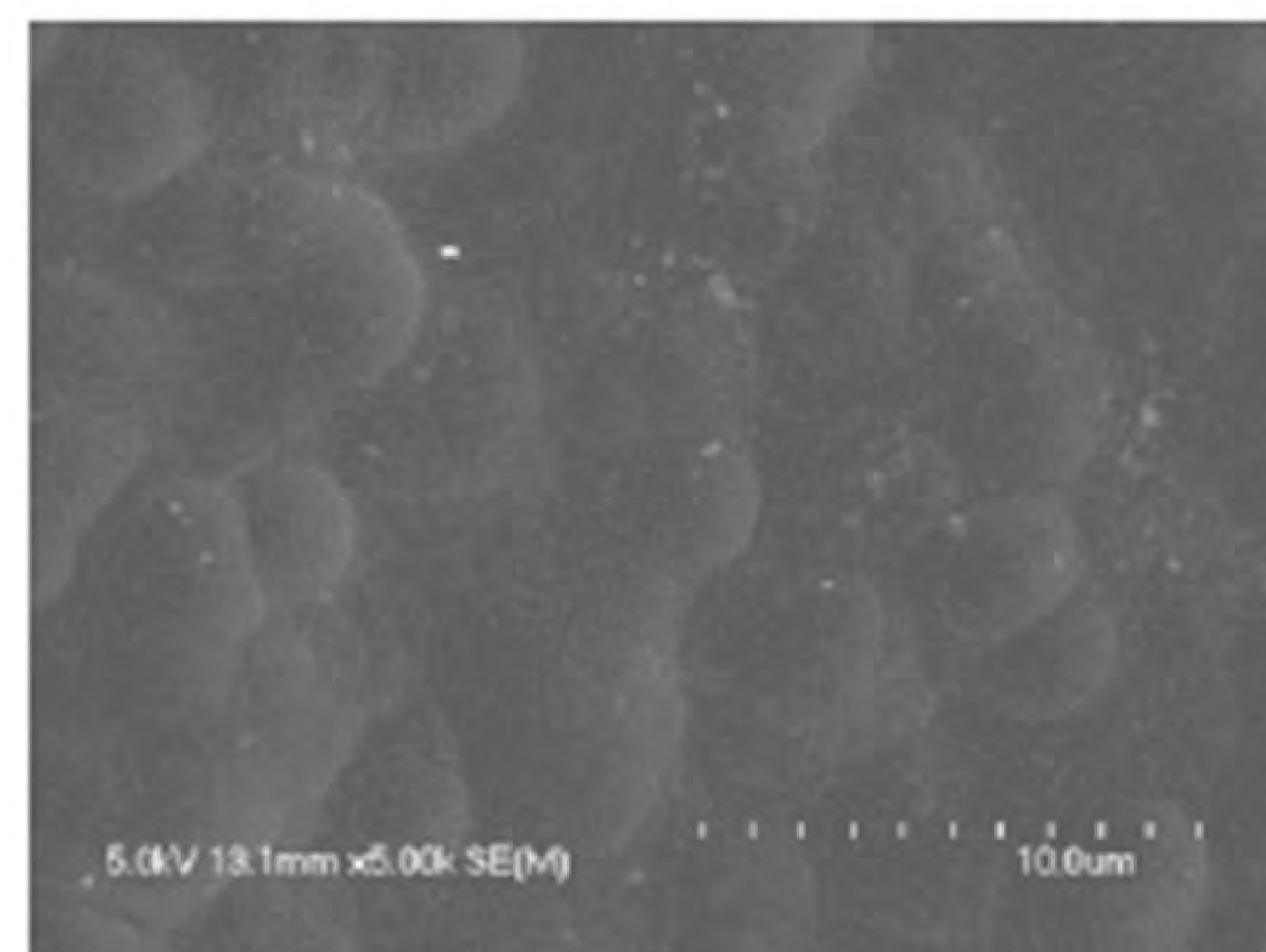
Dry Film Photoresist for ENIG HQ6700S

ENIG & ENEPIG HQ6700S

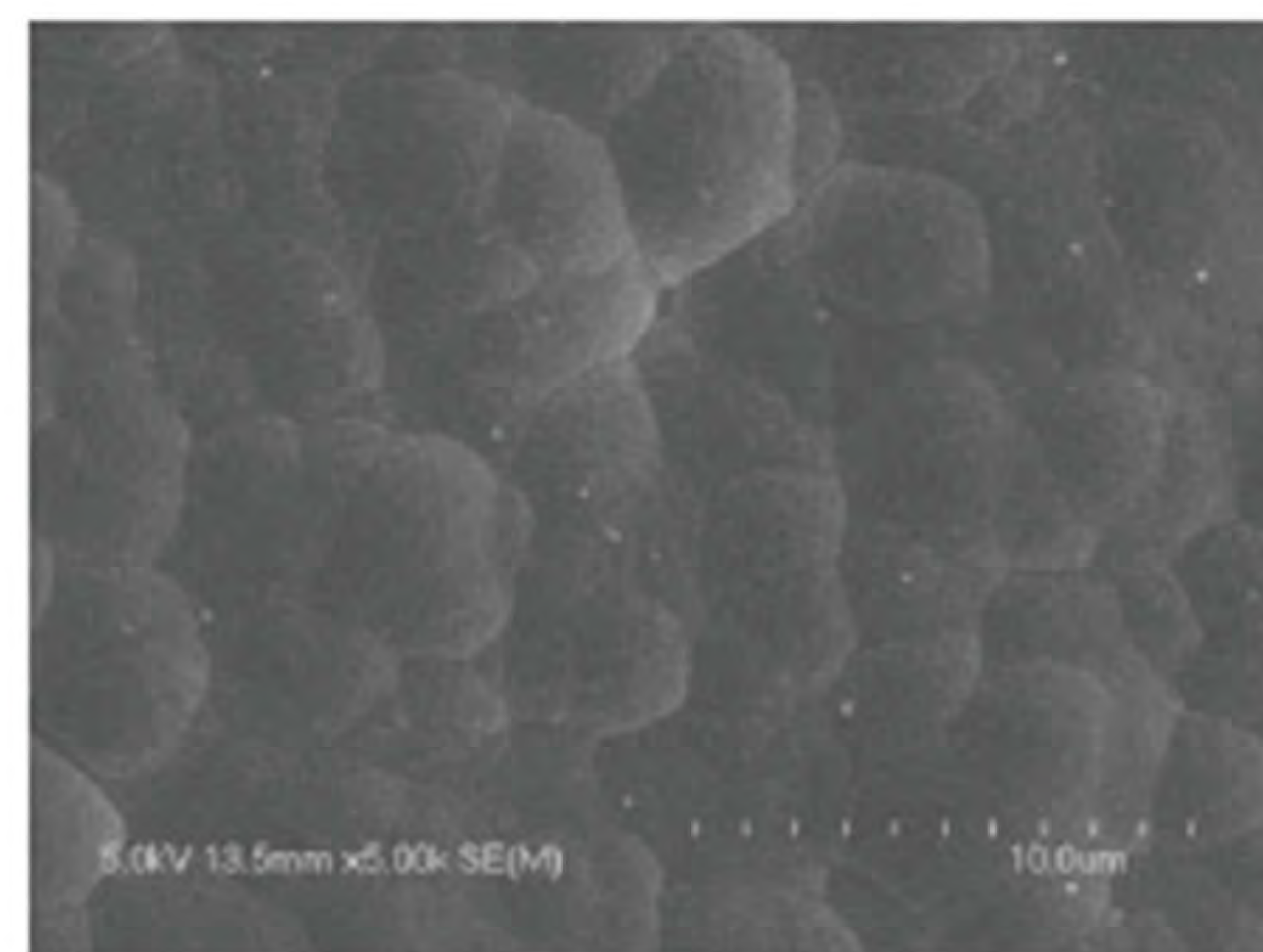
Deposited thickness of Ni & Au



Observation of Nickel morphology after OSPx3



Blank
Ni/Au:
0/0 MTO



After OSPx3
Ni/Au:
2.0/8.5MTO

Advantages

1. Good Chemical resistance to gold plating & ENIG process
2. Good Chemical resistance to alkaline etchant
3. Lower leaching amount
4. Easy stripping



ETERTEC® HQ6300 & HQ6300DI

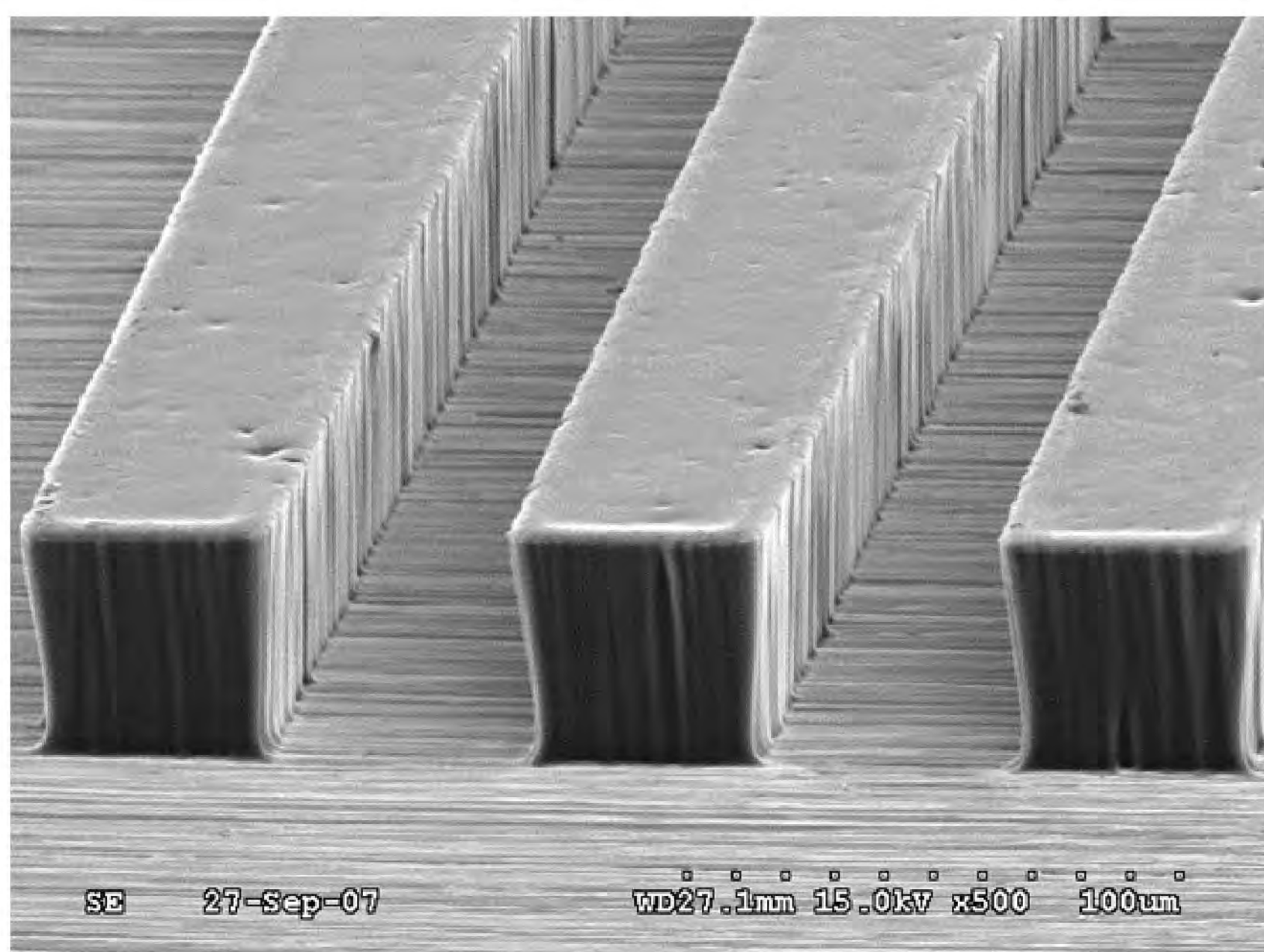
DRY FILM PHOTORESIST

FEATURES

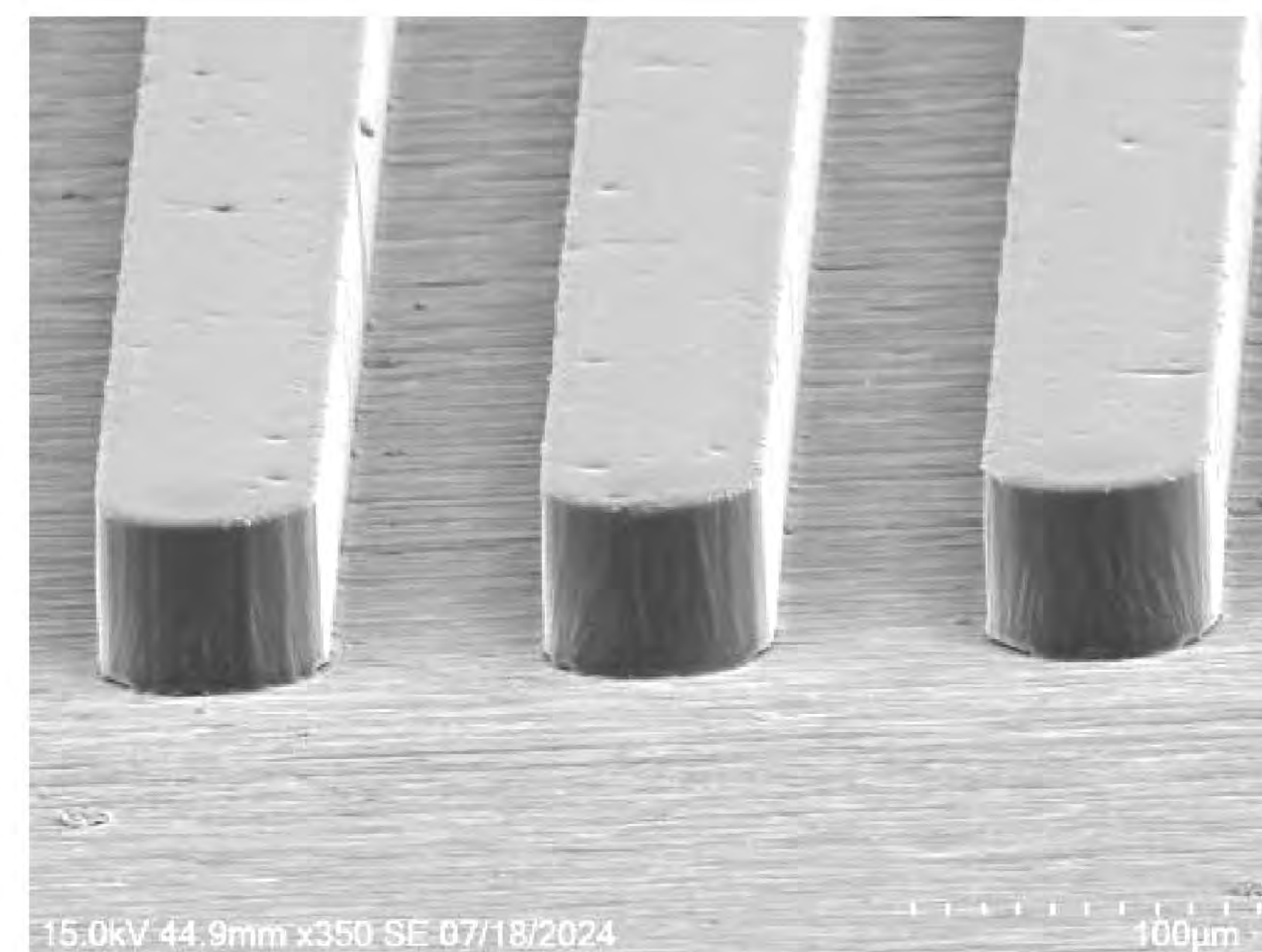
- Designed for conventional & DI exposure applications
- Excellent resistance to gold plating applications
- High resolution
- Excellent adhesion
- Easily stripping and filterable
- Broad processing latitude in each step

特性

- 針對傳統與雷射曝光製程設計
- 抗鍍金能力優
- 線路解析度高
- 線路附著力優
- 去膜容易，膜屑易過濾
- 操作寬度大



HQ6320 22/41SST L/S=50/50 μm



HQ6320DI 25/41SST L/S=50/50 μm

CHARACTERISTICS

| Item | | HQ6320 | HQ6320DI |
|--|----------------------------------|-------------------|-------------------|
| Thickness (μm) | | 49 | 49 |
| Exposure Energy (mj/cm ²) | | 72 * ¹ | 64 * ² |
| 41 STOUFFER STEP HELD | | 22 | 25 |
| Minimum Developing Time x2(sec) * ³ | | 90 | 82 |
| Adhesion (μm) | | 26 | 26 |
| Resolution (μm) | | 45 | 50 |
| Stripping (sec) * ⁴ | Time | 83 | 74 |
| | Flake Size | sheet | break sheet |
| Au Plating * ⁵ | Planting Time (min) | 10 | 10 |
| | Theoretical Au Thickness (μinch) | 110 | 110 |

*1: Collimated light, *2: h-line DI, *3: 50% BP, 28oC, *4: 3% NaOH by dipping

*5: [Au+]=2g/L, 0.45 ASD



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ETERTEC® PR8200 Series

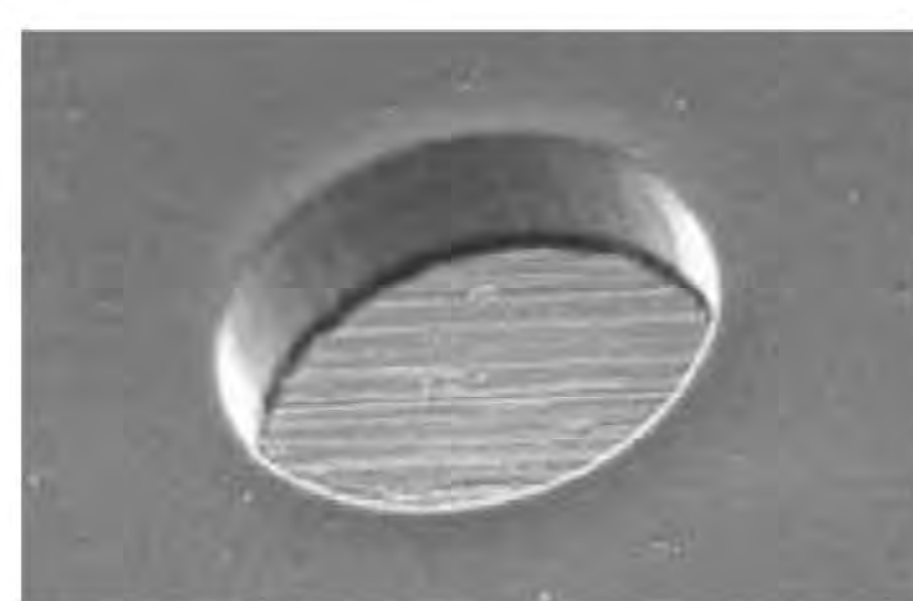
Photo-Imageable Coverlay (PIC)

ETERTEC® PR8200是低溫150°C 烘烤型的高精密度乾膜感光弱鹼顯像型光阻，應用於高精密度亞醯胺基板 (PI)/金屬基板外層線路保護。

ETERTEC® PR8200 series are alkaline developable photosensitive dry film permanent photoresist of low temperature 150°C post-bake used for the high accuracy polyimide substrate (PI) / metal substrate to protect wiring.

- 操作範圍寬
- 優良解析能力與結構完整性
- 底材密著性佳
- 優良耐熱焊錫性
- 優良耐化學鍍金
- 優良柔韌性與低反翹力
- Wide operation window
- High resolution and conformation
- Excellent adhesion to substrate
- Excellent high temperature solder resistance
- Excellent Electro-less Ni/Au plating resistance
- Excellent flexibility and low warpage / sharp memory

| ITEM | ETERTEC® | |
|---|--------------------------------------|------------------------------|
| | PR8200B1 | PR8200Y1 |
| (Applications) | Flexible-board | |
| Color | Matt black | Amber |
| Thickness | 23 μm/ 30 μm/ 38 μm | |
| Solid content | 100 wt% | |
| Shelf life | 3 months (In dark room below 0~5 °C) | |
| Minimum developing time 1%(wt) Na ₂ CO ₃ aqueous solution at 30 °C | ~50% Break point | |
| Exposure energy High mercury lamp (ORC EXM-1201F 5KW) | 250 ~ 350 mJ/cm ² | 200 ~ 300 mJ/cm ² |
| Recommended Eternal 21-step tablet | 8 ~ 10 step (x / 21) | |
| Resolution Line/Space L/S=n/n (μm) | 60 μm / 60 μm | 50 μm / 50 μm |
| Resistance to bending (180° x 500 g x 10 sec) | 20 cycles | 20 cycles |
| Warpage | ≤ 1 mm | ≤ 1 mm |
| Cosmetic-Glossiness (60°) | ~10 GU | 50~60 GU |



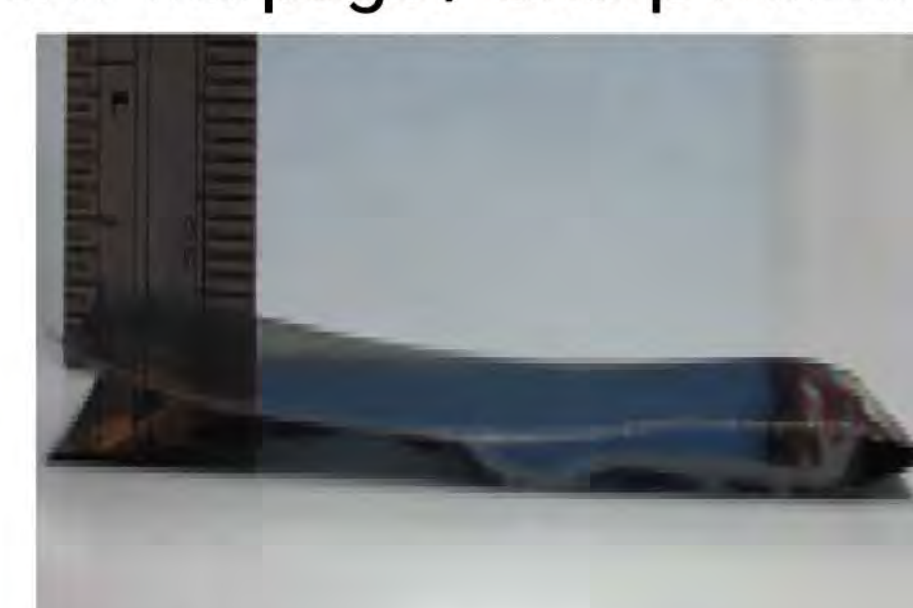
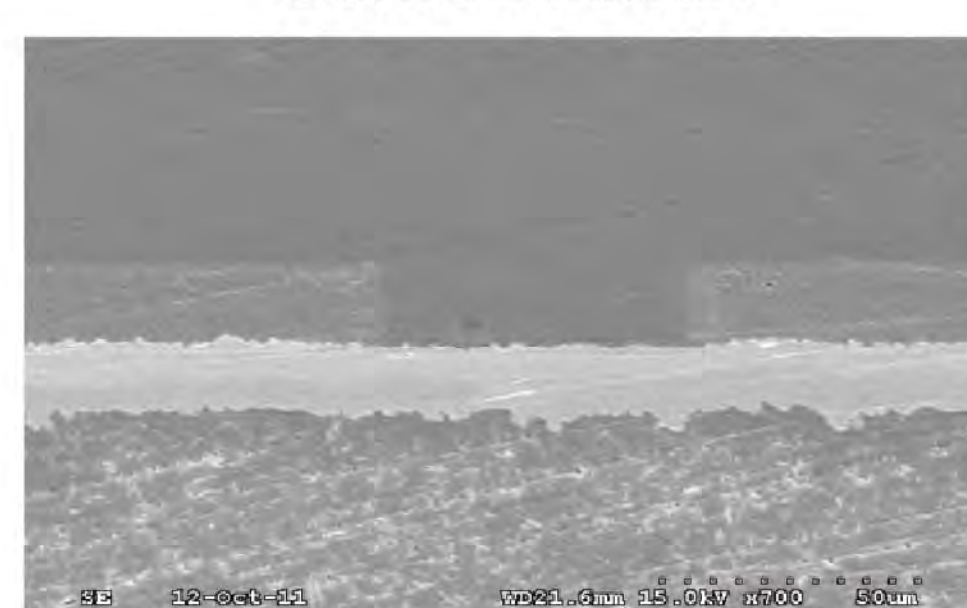
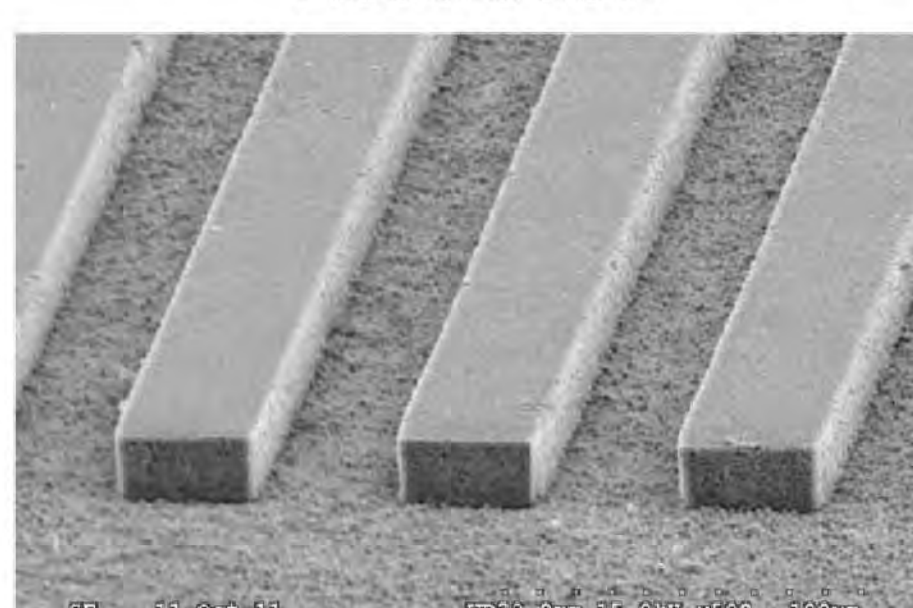
Resolution



Conformation



Low warpage / Sharp-memory



液態型聚醯亞胺於增層介電材料之應用

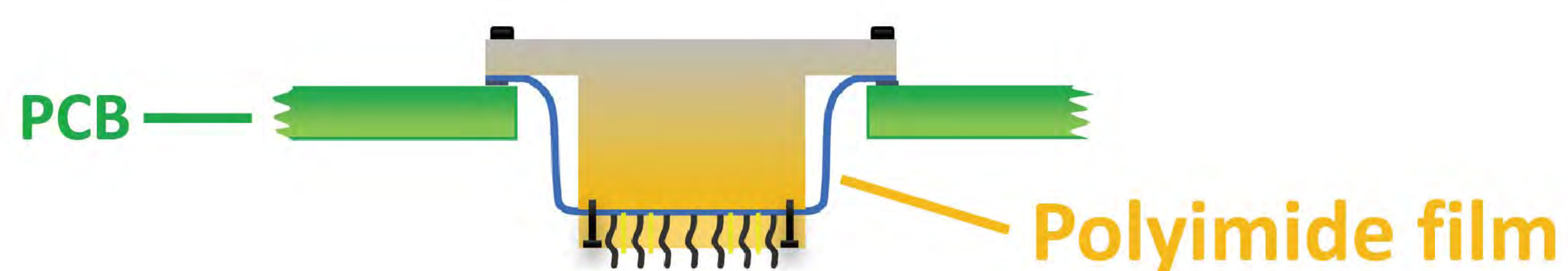
ETERFLEX Polyimide as dielectric material application in build-up process

FEATURES

- Non-photosensitive polyimide precursor
- Low viscosity with high solid content
- Low ionic/metallic impurity content
- Excellent thermal stability
- Excellent mechanical and electrical properties

特性

- 非感光型聚醯亞胺
- 低黏度高固含量
- 低離子含量
- 優異的耐熱特性
- 優異的機械與電氣特性



Dielectric PI material in probe card application



ETERFLEX PI as dielectric in multi-layer thin film

CHARACTERISTICS

| ITEMS | Unit | ETERFLEX NP2107 series | ETERFLEX NP2404 series |
|---|--------|------------------------|------------------------|
| 產品特色 Product feature | | Ultra low CTE | Low dielectric loss |
| 熱膨脹係數 Thermal expansion coefficient | ppm/°C | 3-5 | 20 |
| 介電常數 Dielectric constant (10 GHz) | -- | ≤3.3 | ≤3.12 |
| 介電損耗 Dielectric loss (10 GHz) | -- | 0.0065 | 0.0027 |
| 抗張強度 Tensile strength | MPa | ≥350 | ≥200 |
| 楊氏係數 Young's modulus | GPa | >6.6 | >7 |
| 斷裂伸長量 Tensile elongation | % | ≥23 | ≥25 |
| 玻璃轉移溫度 Glass transition temperature | °C | >360 | >400 |
| 熱裂解溫度 Thermal decomposition temperature | °C | ≥610 | ≥490 |
| 體積阻抗 Volume resistivity | Ω-cm | >1.0×10 ¹⁶ | >1.0×10 ¹⁶ |
| 表面阻抗 Surface resistivity | Ω | >1.0×10 ¹⁵ | >1.0×10 ¹⁴ |



長 興 遠規劃未來 創世界品牌



Your Solution Provider
Move Forward with Time



Copper Clad Laminate
銅箔基板

Vacuum Laminator
真空壓膜機

Toll Coating Service
精密塗佈代工



Dry Film Photoresist
負型水溶性乾膜光阻

Dry Film Photoimageable Solder Mask
乾膜防焊光阻

Photo-Imageable Coverlay
感光型覆蓋膜

Liquid UV Curable Marking Ink
液態文字油墨



光阻事業部
Photoresist Materials Division