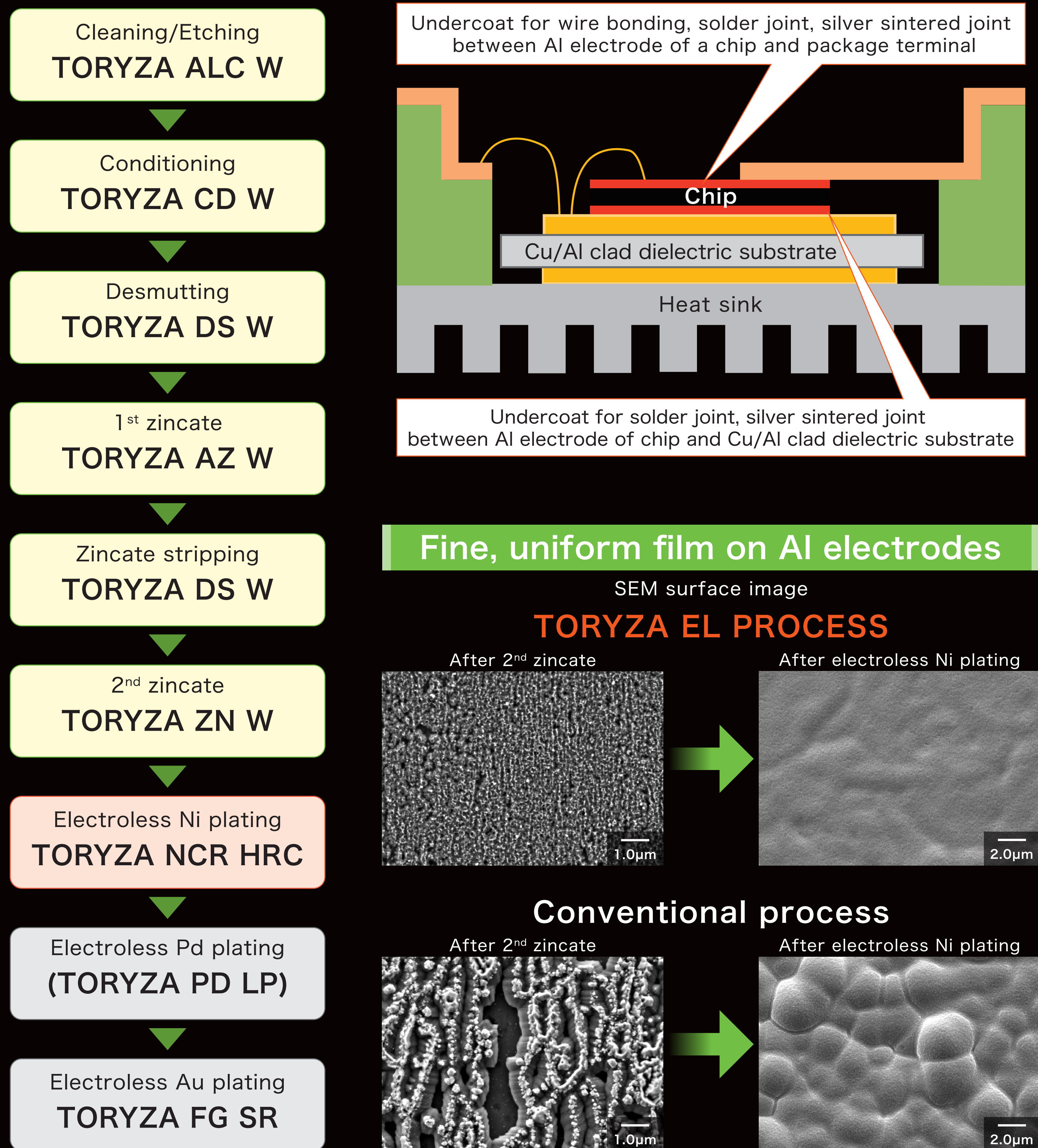
UBM formation on aluminum electrode on wafer

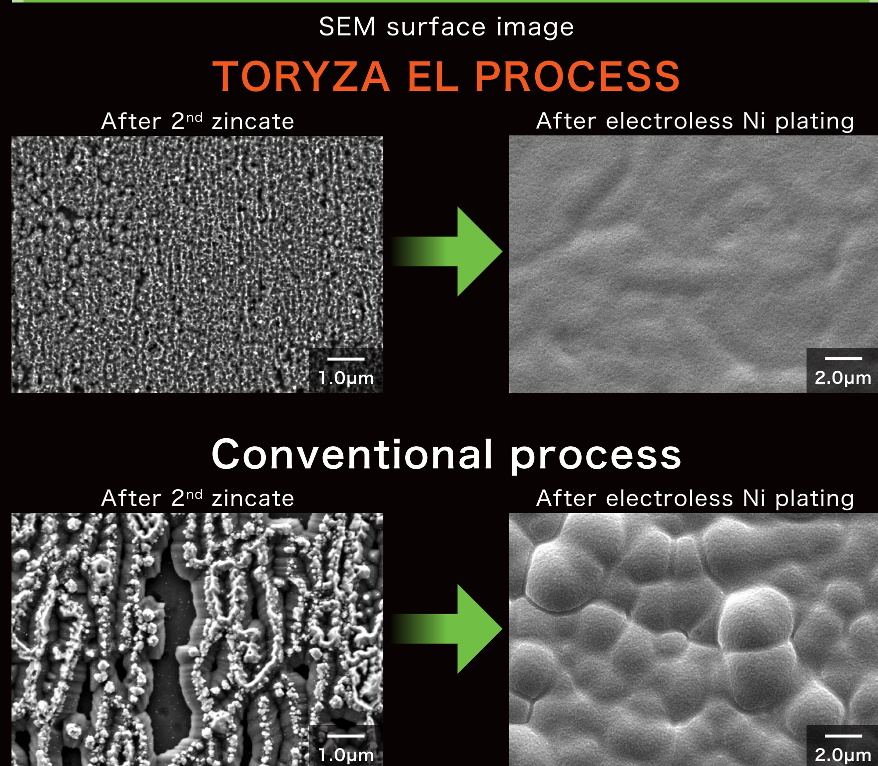
TORYZA EL PROCESS

- Zincate films are densely formed to achieve smooth plating films
- Pre-treatment process: Reduce etching amount of Al sputtering films, prevent local corrosion
- Electroless Ni plating films are suitable for high temperature joint and use



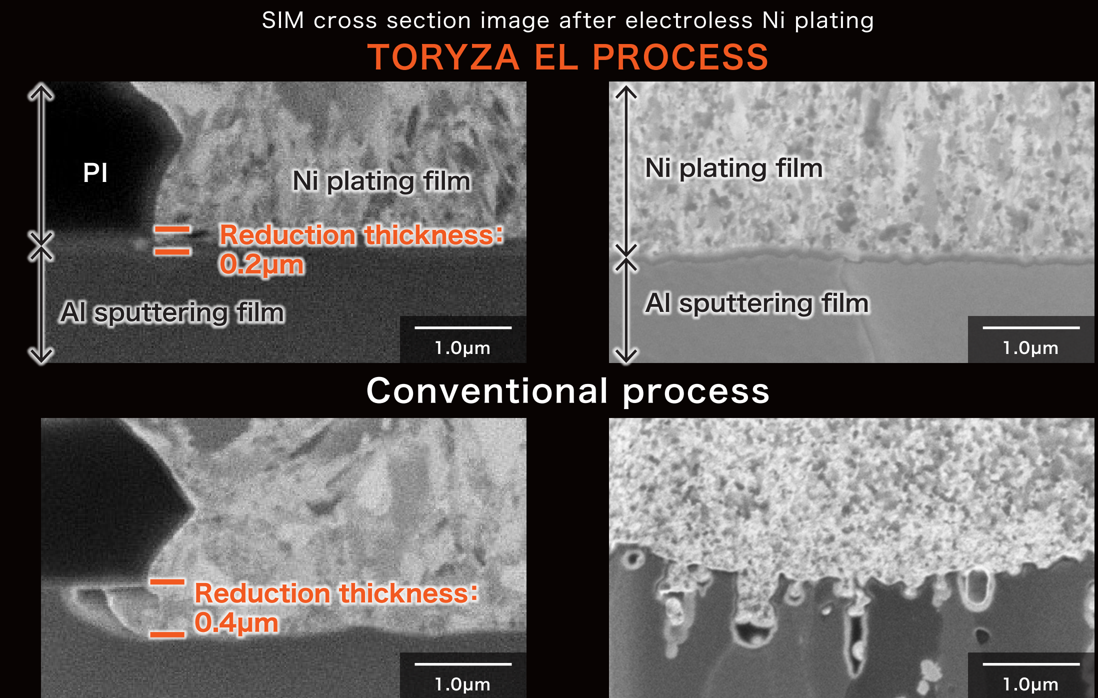
Fine, uniform film on Al electrodes

SEM surface image

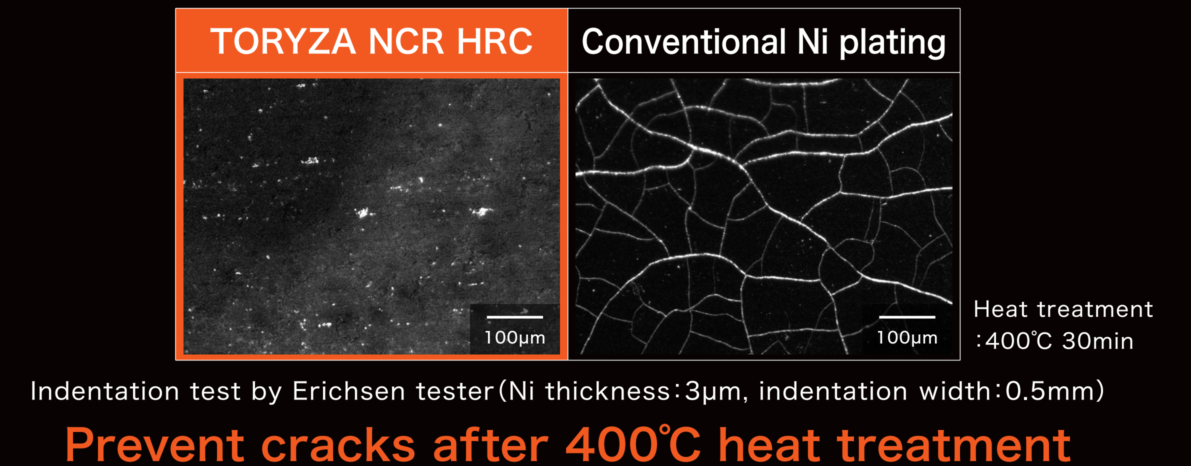


Prevent local corrosion of Al sputtering layer

SIM cross section image after electroless Ni plating



Electroless Ni plating film applicable to high-temperature jointing



Indentation test by Erichsen tester (Ni thickness: 3μm, indentation width: 0.5mm)

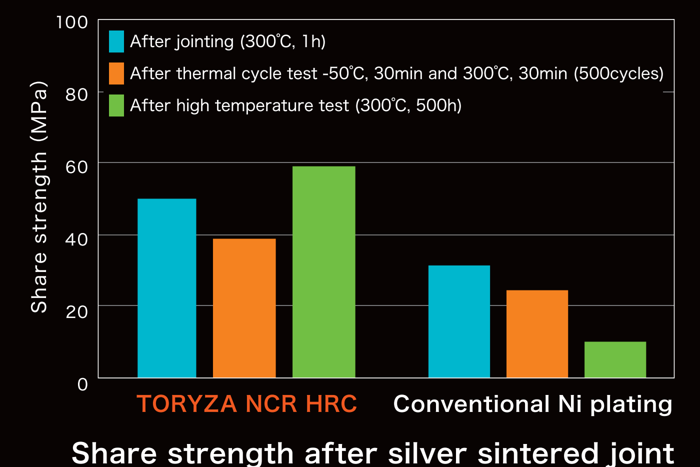
Prevent cracks after 400℃ heat treatment

Electroless Ni plating film applicable to use under high-temperature environment

Crack occurrence comparison of electroless Ni plating film

Electroless Ni plating film	Crack occurrence		
	After jointing	After thermal cycle	After high temperature test
TORYZA NCR HRC	No	No	No
Conventional Ni plating	No	Occur	Occur

Presented by SANKEN, Osaka University Flexible 3D JISSO Collaborative Research institute
SiC Chip: Ti sputtering on SiC chip, and form Ag sputtering layer
Jointing condition: Electroless Ni plating (7μm thickness) on DBA substrate and sintering SiC chip on DBA substrate with Ag paste
Adding 1MPa pressure, 300℃, 1h



Share strength after silver sintered joint