

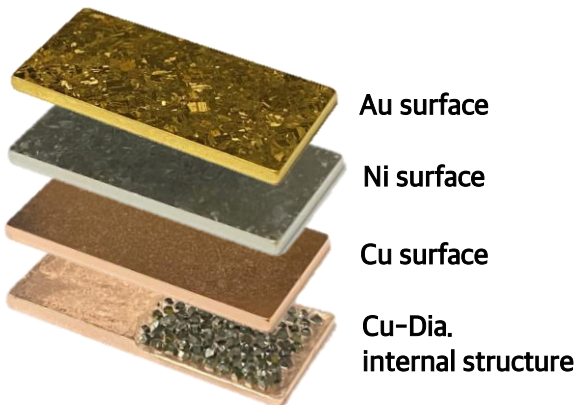
● Applications

- 5G / 6G wireless communications
- Military & aero space communications
- Servers, Internet switches, ASICs, Wearables

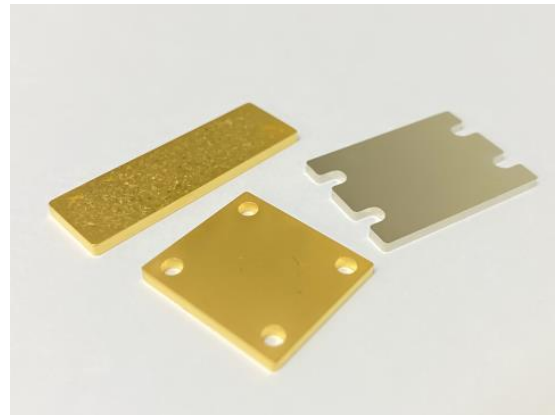
● Typical Features

- High Thermal Conductivity ($TC \approx 800 \text{ W/mK}$)
- Low Coefficient of Thermal Expansion ($CTE \approx 8 \text{ ppm/K @ RT}$)
- High reliability under thermal cycling test

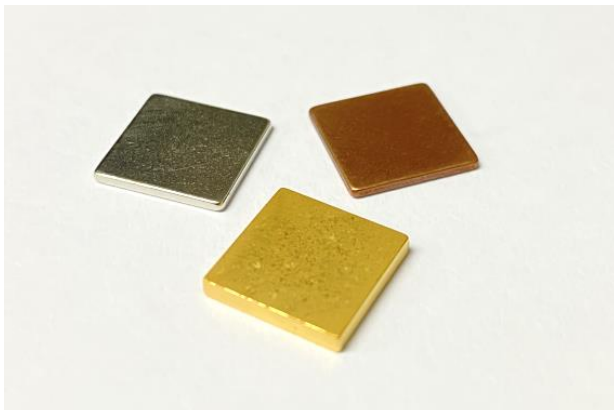
● Structure



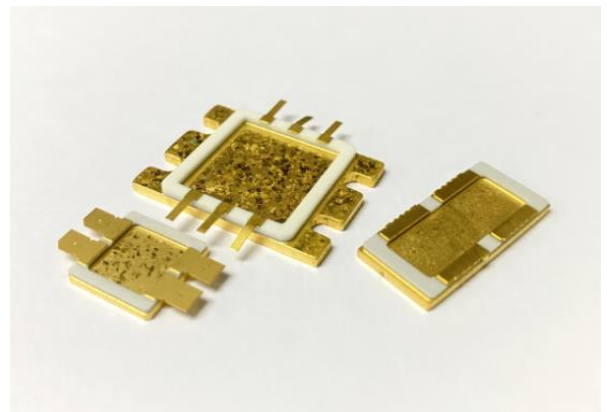
● Hole, Ear, Rectangular type



● Surface finishing : Cu, Ni, Au

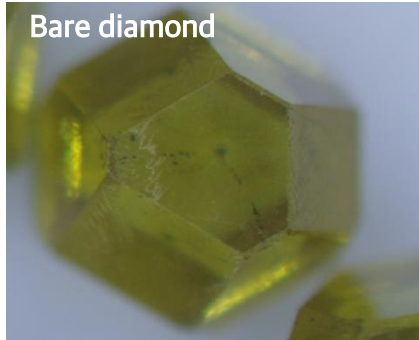


● Applicable to 800°C brazing

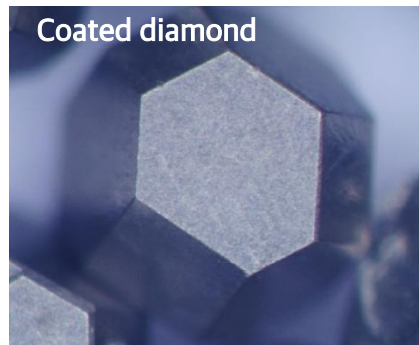


◆ Key Technology 1: Metal-coating on diamond surface

- Diamond particles

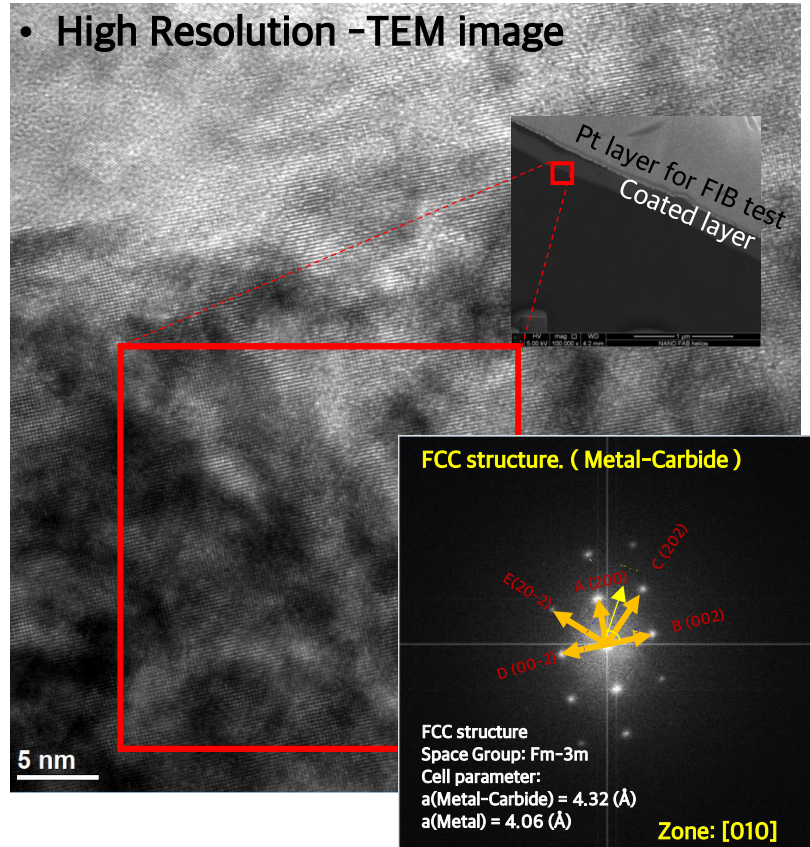


Bare diamond



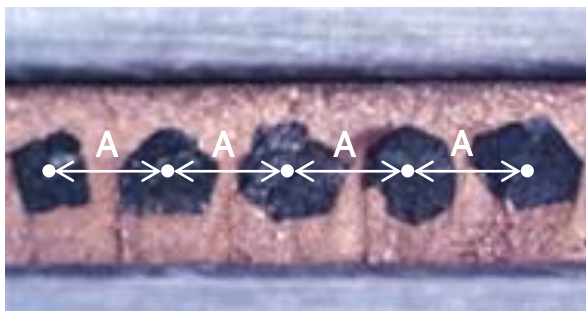
Coated diamond

- High Resolution -TEM image

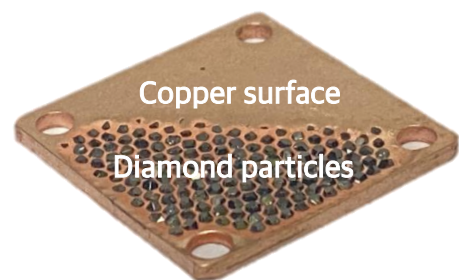


Observation of the atomic structure revealed the presence of metal carbides.

◆ Key Technology 2: Diamond dispersion



<Cross sectional>



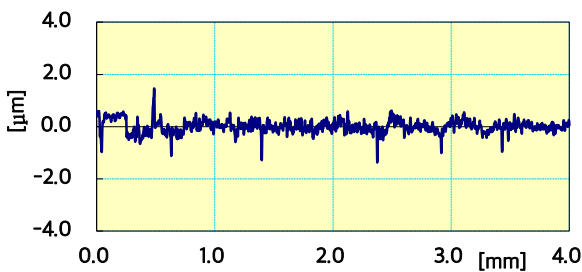
<Etched surface>

All diamond particles are located in accordance with our special design rule.

◆ Key Technology 3: Thin copper layer cover all face of product



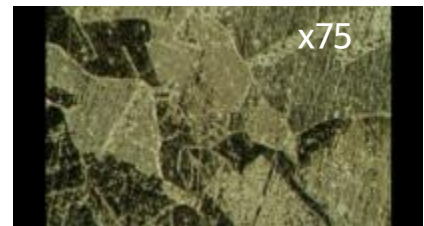
<Selective region of Cu-Dia.>



<Surface roughness>



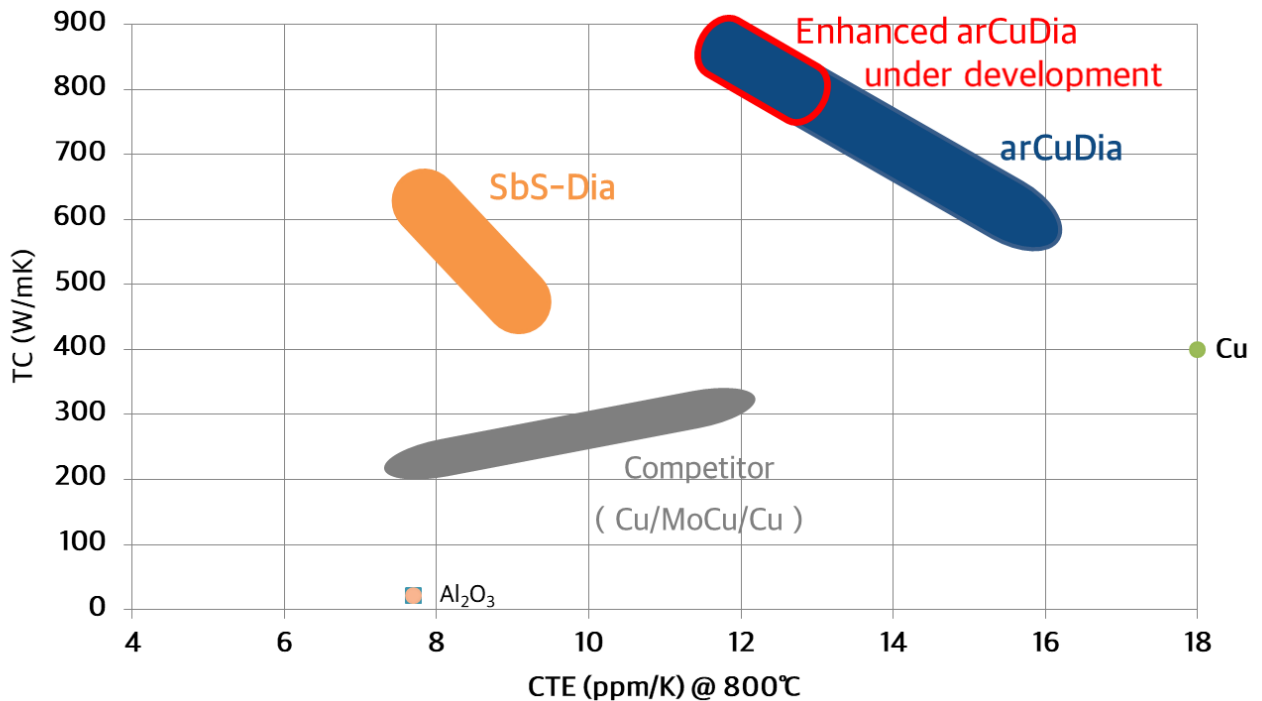
<All surface covered with copper>



<Surface morphology>

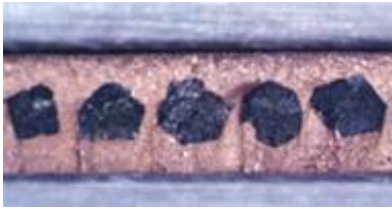
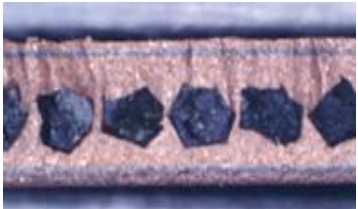
- Easy cutting
- Smooth surface (Typical $R_a = 0.15 \mu\text{m}$)
- Au or Ni plating on Cu surface

◆ Key Technology 4: Selective TC & CTE balance according to customer requirements



◆ Typical Properties

* arCuDia = Ideal (Arcadia) Cu-Diamond structure
SbS = Strain balanced Structure

Model		*arCuDia	*SbS-Dia.
Structure		Copper-Diamond	Cu/CuMo/CuDia/CuMo/Cu
Dia. Volume ratio		30%	23%
Cross Section			
CTE (ppm/K)	RT	7.7	8.1
	RT~800°C	14.1	8.2
Thermal conductivity (W/m·K)		740	600
Thickness (mm)		$0.6 \leq t$	$0.9 \leq t$

◆ Thermal Cycling Test: -65 ~ +150°C, 1,000 cycle

