

(2019.11.01 Revised)

Comparison Evaluation of Power Inductors



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I. Introduction

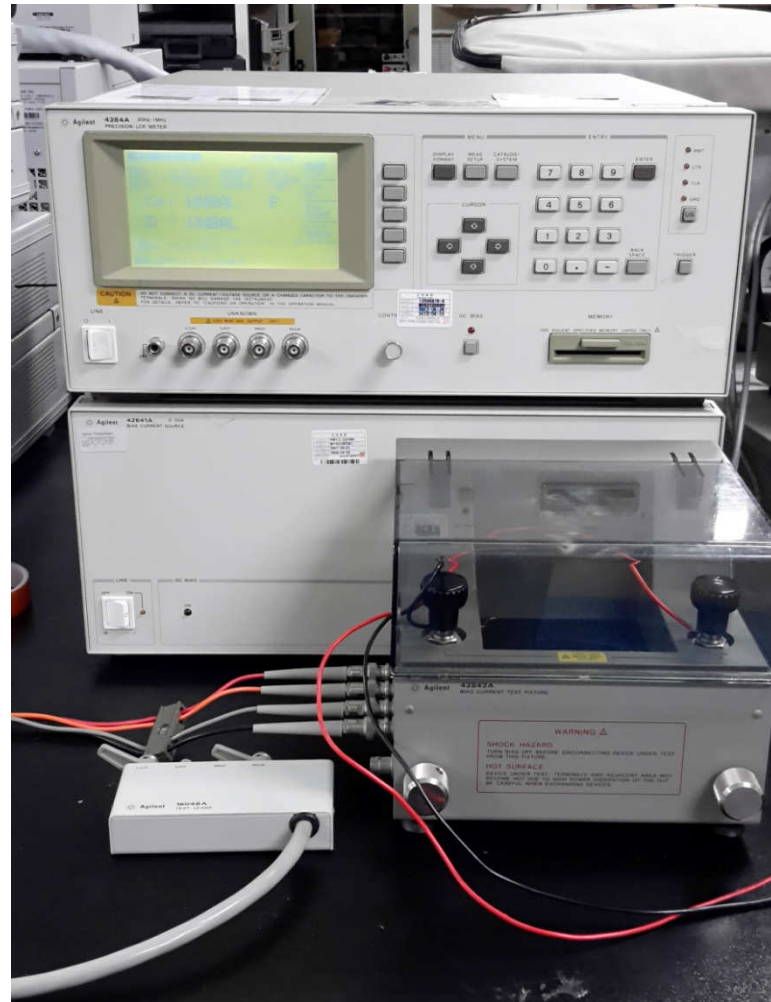


Introduction

- **Specimen:** Power Inductor
- **Test:**
 - Electrical property measurements
 - X-ray analyses
 - SEM analyses
 - Environmental tests
- **Test term:** 2019. 05. 14 ~ 2019. 10. 16
- **Test environment:** (25 ± 5) °C, Below 75% room humidity
- **Test apparatuses:**
 - Precision LCR meter (4284A, Agilent, USA)
 - Test cable assembly (16048A, Agilent, USA)
 - Precision impedance analyzer (4294A, Agilent, USA)
 - Resistance HiTester (3541, HIOKI, Japan)
 - X-ray (XTV160, Nikon, Japan)
 - Focused ion beam (Quanta 3D DualBeam, FEI, Netherland)
 - Temperature and humidity test chamber (SE-CT-04, Suksan, Korea)
 - Temperature and humidity test chamber (HYGROS 250C, ACS, Italy)
 - Thermal shock chamber (Excal 120CT, Climats, France)
 - Vibration tester (V875-640EF, LDS, England)
- **Etc:** Blind test
- **Contact:** Lee, Ju Ho ☎ +82-31-789-7282 / leejuho@keti.re.kr

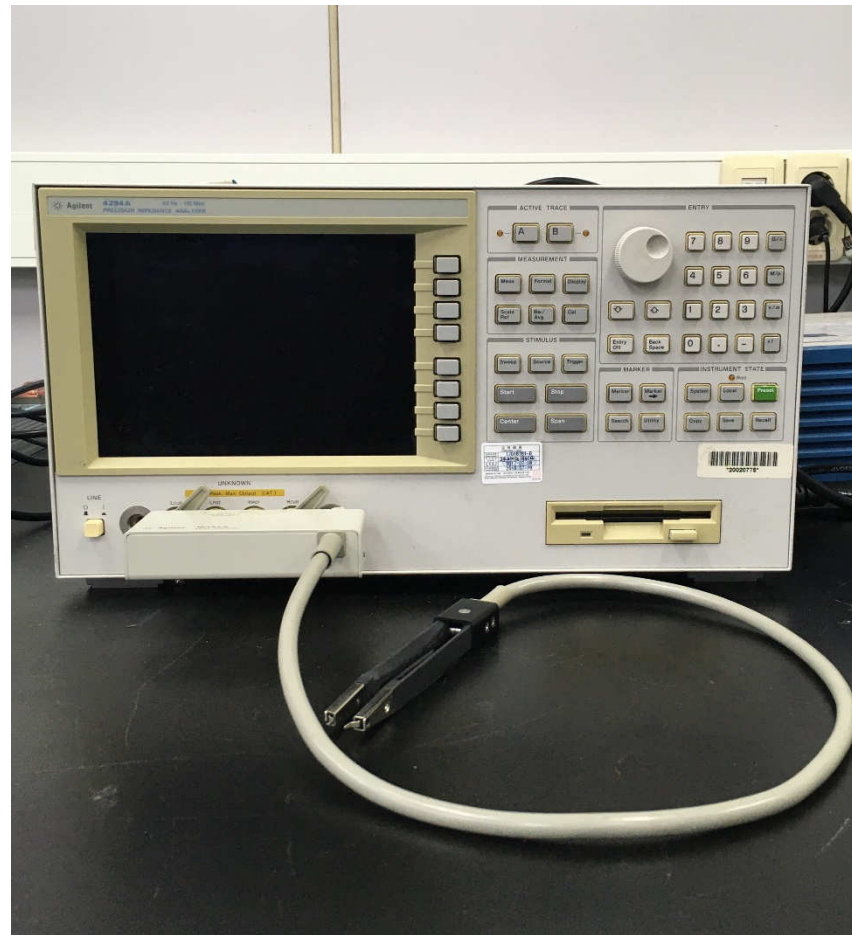
Introduction

- **Test apparatuses:**
 - Precision LCR meter with test cable assembly (4284A, 16048A, Agilent, USA)



Introduction

- **Test apparatuses:**
 - Precision impedance analyzer (4294A, Agilent, USA)



Introduction

- **Test apparatuses:**
 - Resistance HiTester (3541, HIOKI, Japan)



Introduction

- **Test apparatuses:**
 - X-ray (XTV160, Nikon, Japan)



Introduction

- **Test apparatuses:**
 - Focused ion beam (Quanta 3D DualBeam, FEI, Netherland)



Introduction

- **Test apparatuses:**
 - Temperature and humidity test chamber (SE-CT-04, Suksan, Korea)



Introduction

- **Test apparatuses:**
 - Temperature and humidity test chamber (HYGROS 250C, ACS, Italy)



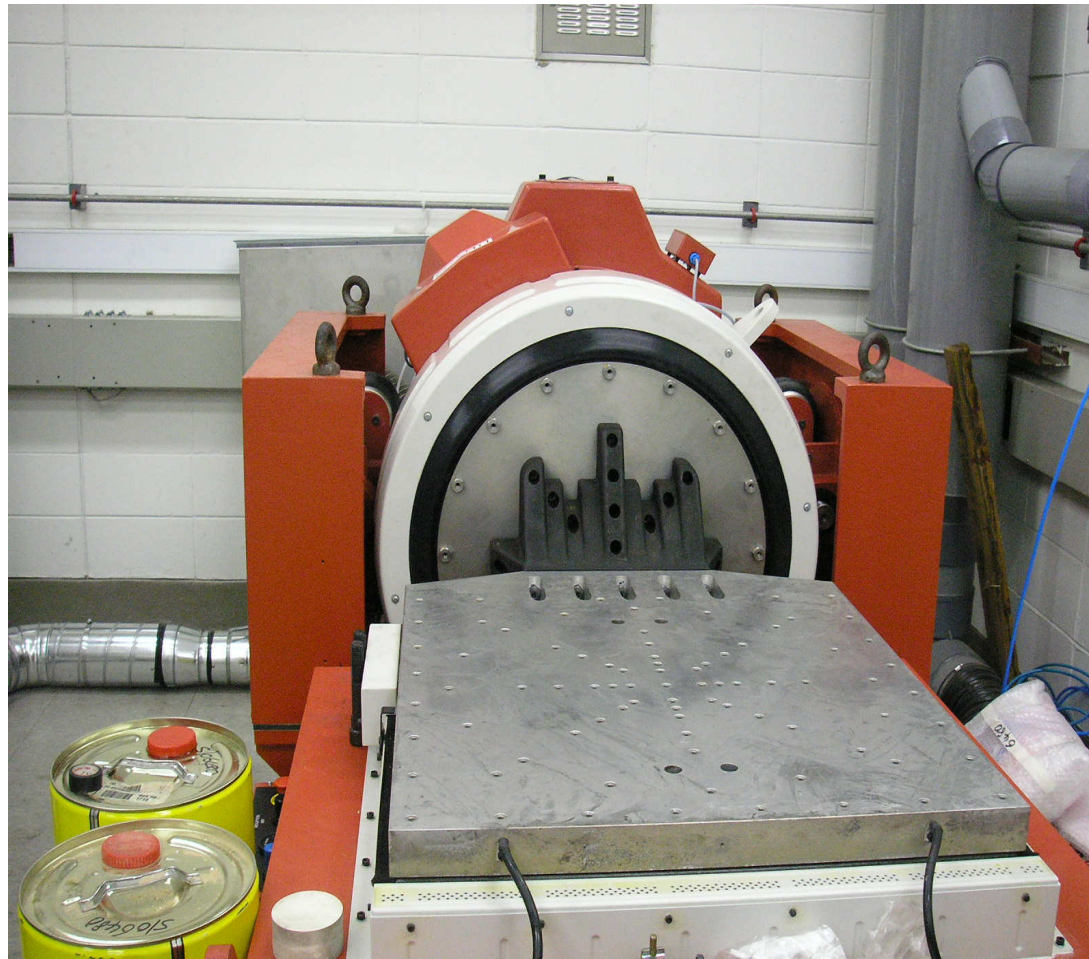
Introduction

- **Test apparatuses:**
 - Thermal shock chamber (Excal 120CT, Climats, France)

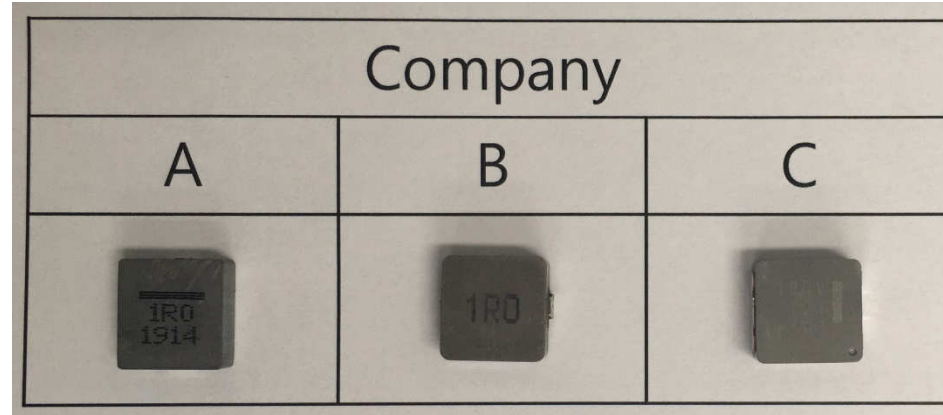


Introduction

- **Test apparatuses:**
 - Vibration tester (V875-640EF, LDS, England)



Specimens

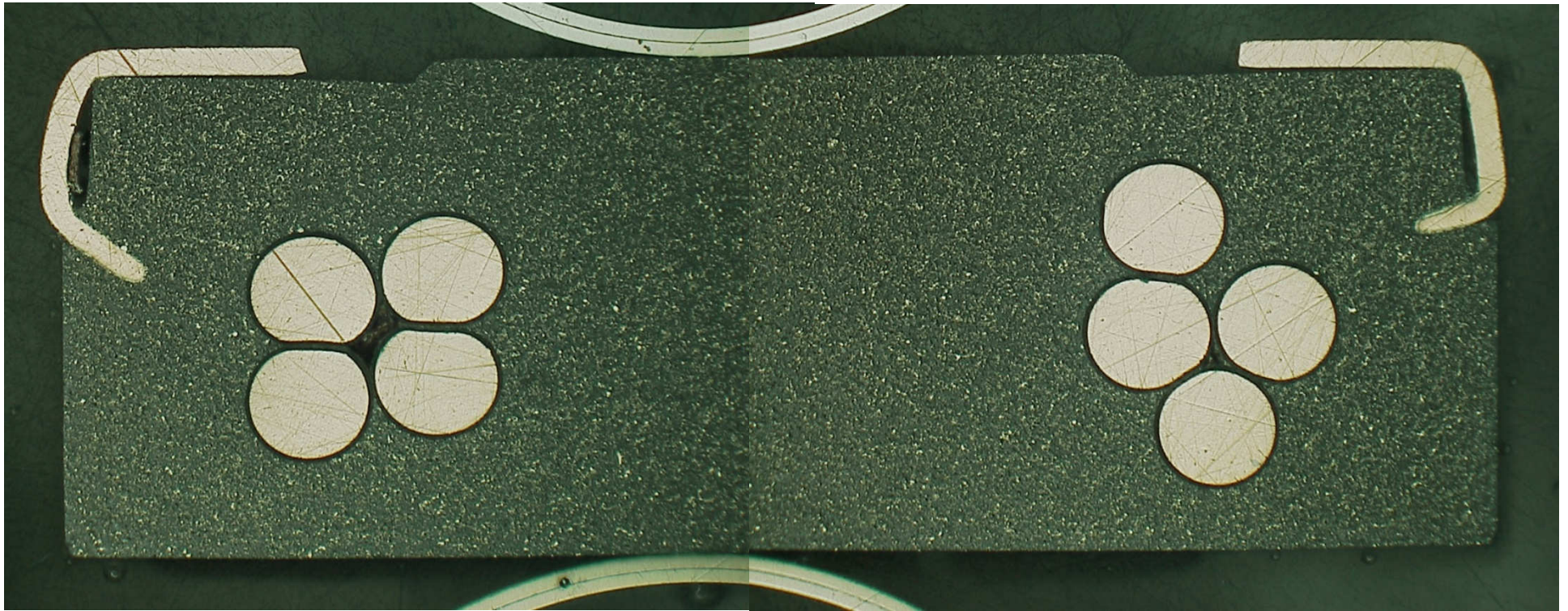


Sample	Inductance		$R_{dc (max)}$ ($m\Omega$)	Test Frequency(Hz)	Operation temp. ($^{\circ}C$)
	L (μH)	Tol. (%)			
A	1.0	± 20	3.2	1 M	-40 ~ +125
B	1.0	± 20	3.1	100 K	-55 ~ +125
C	1.0	± 20	2.86	100 K	unknown ~ +155

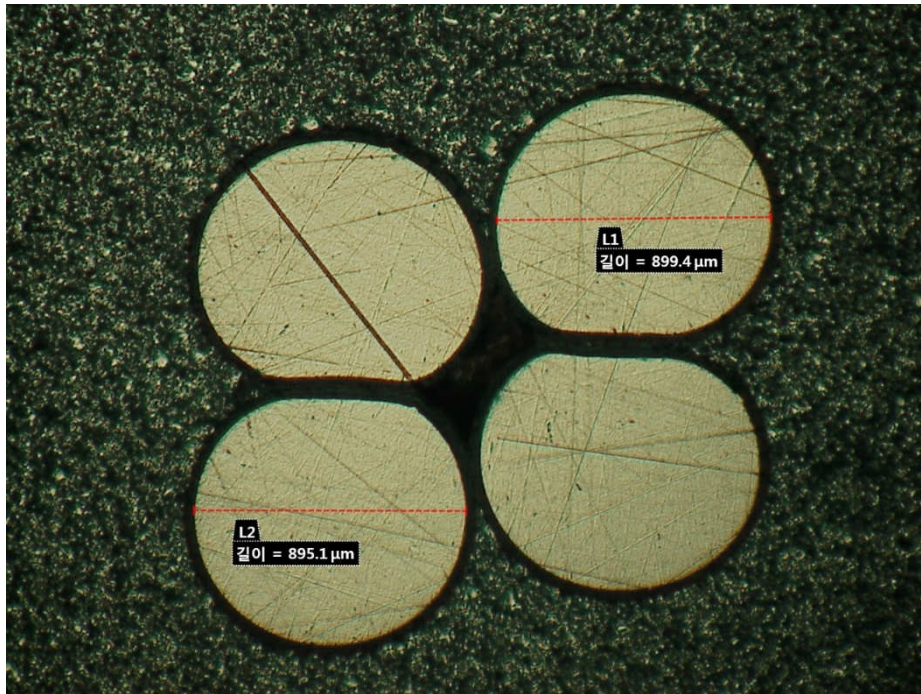
II. Optical microscope analyses (内部短面観察)



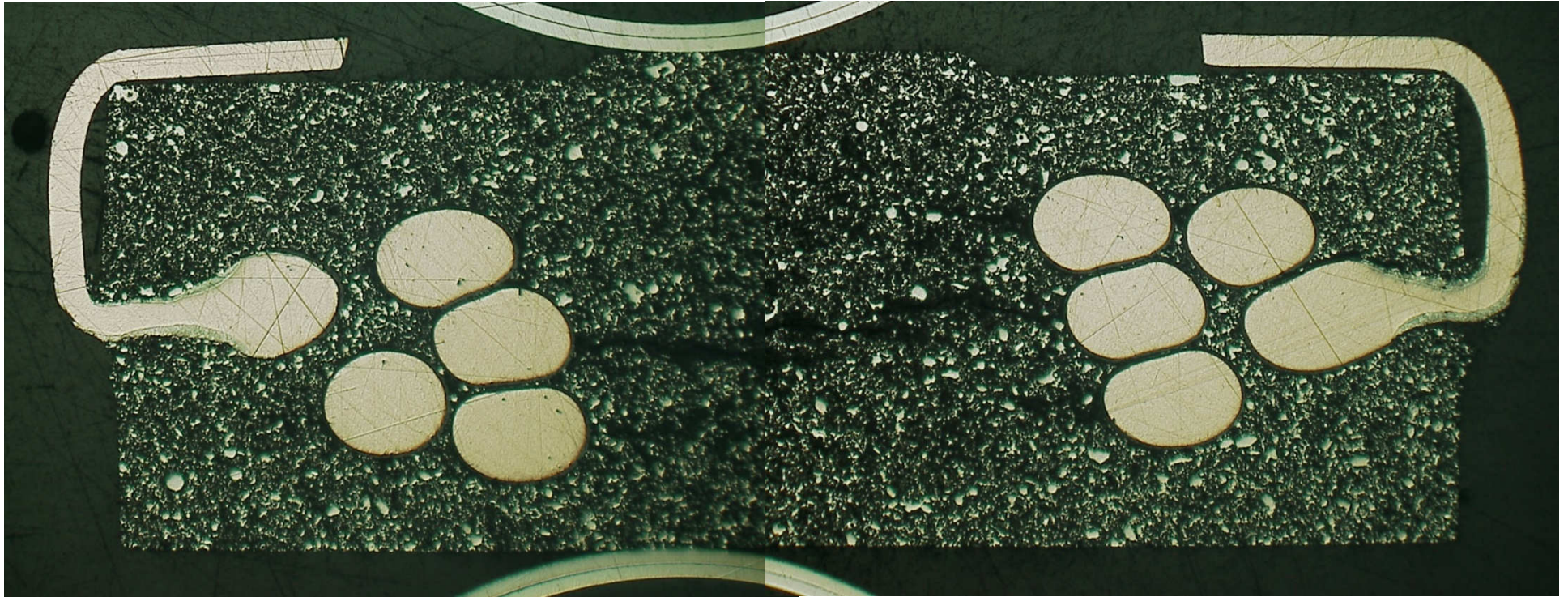
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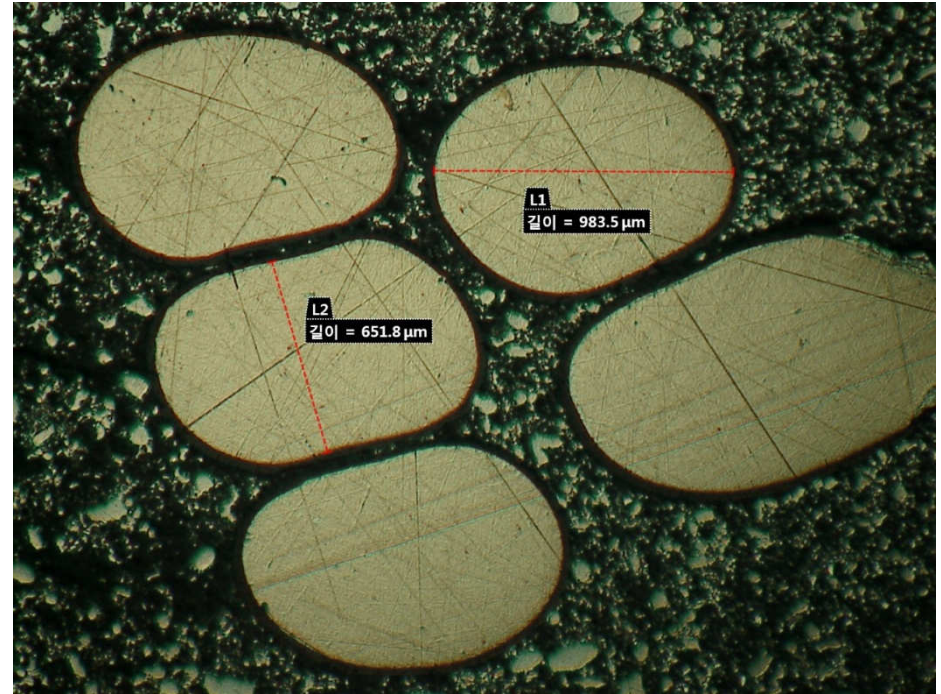
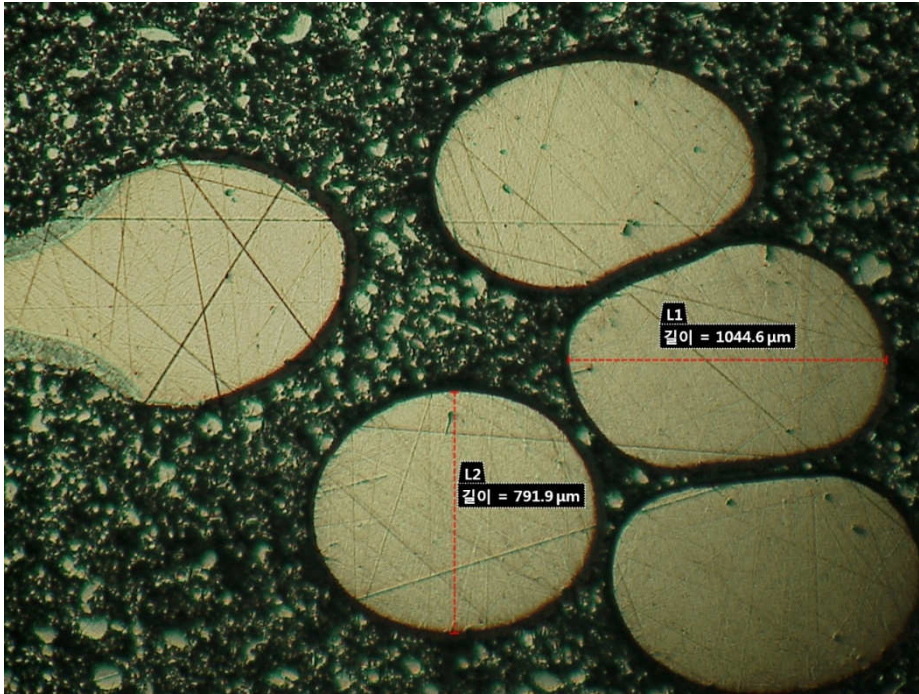
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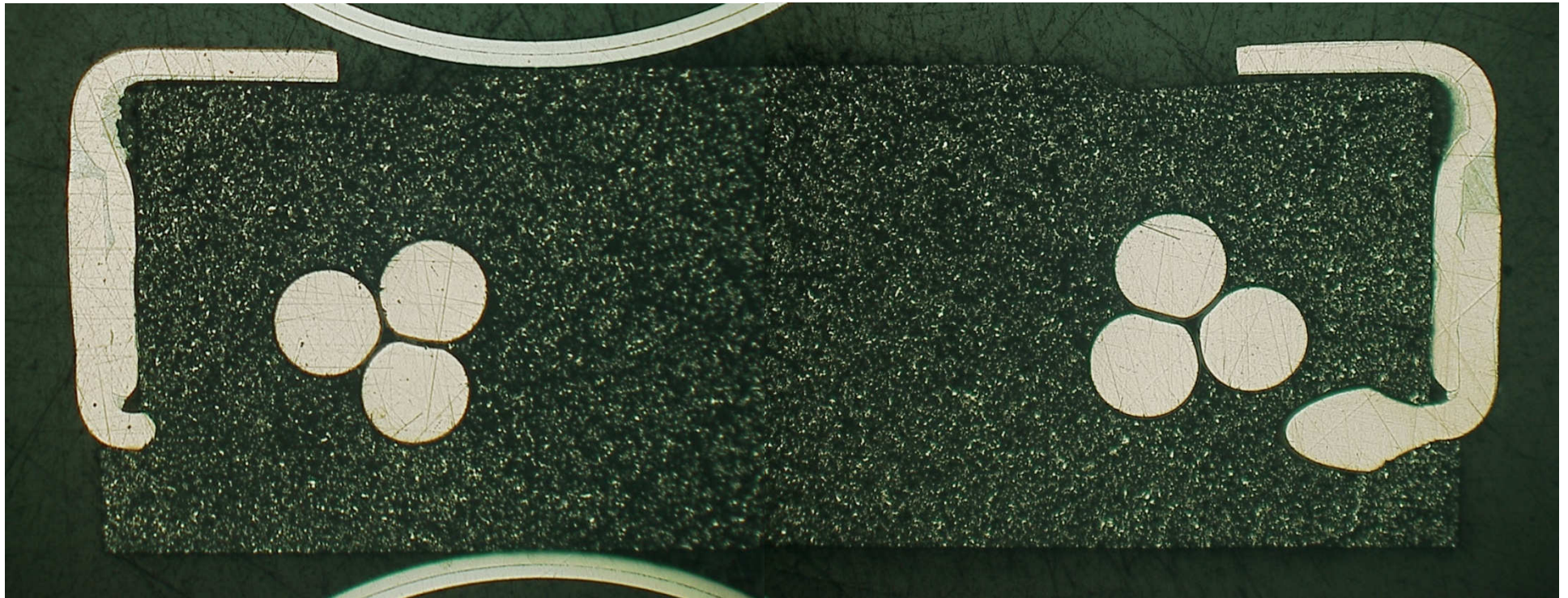
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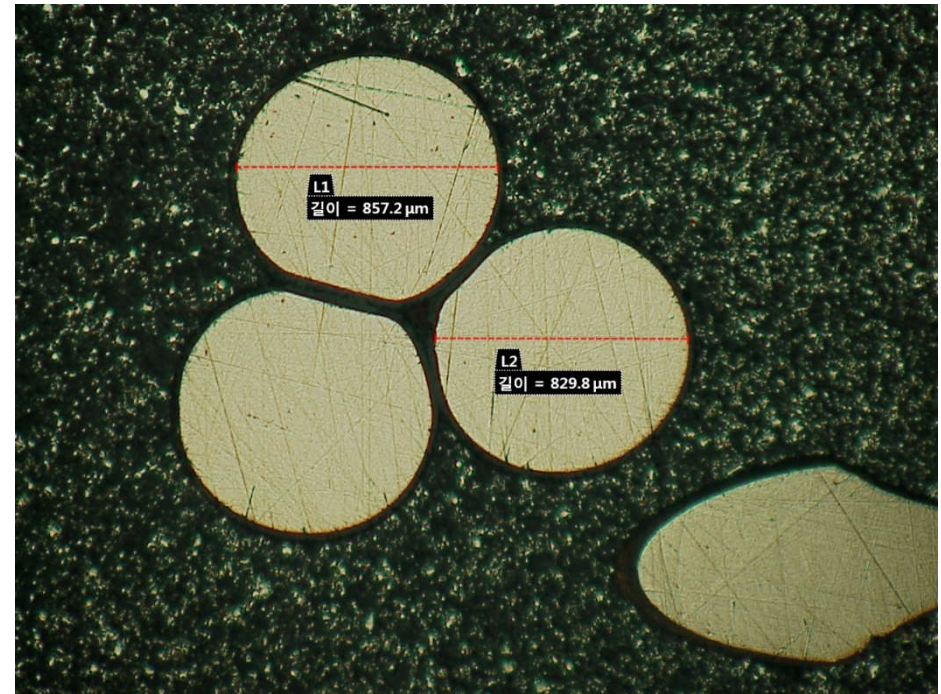
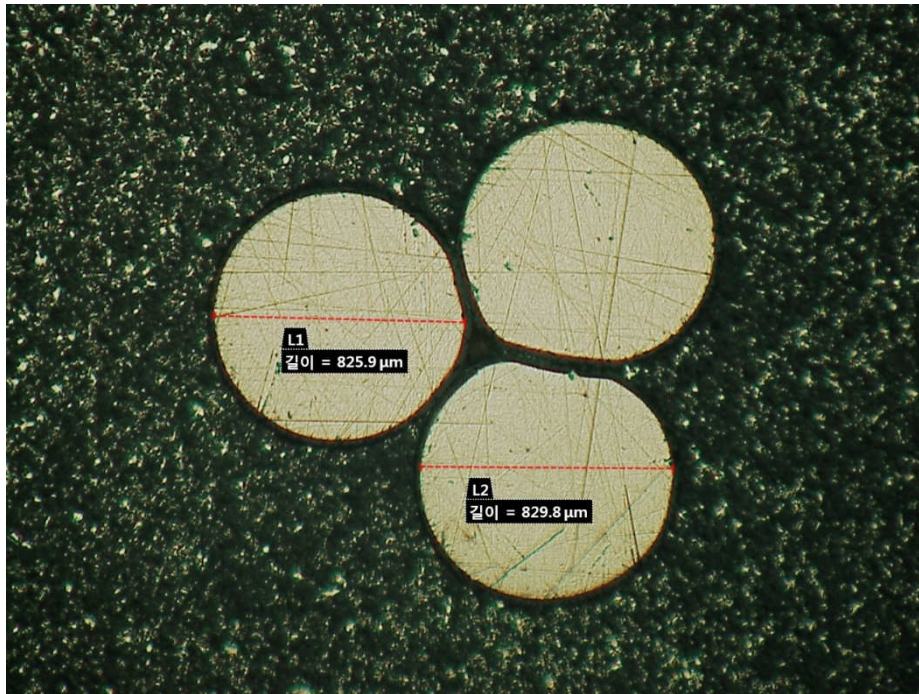
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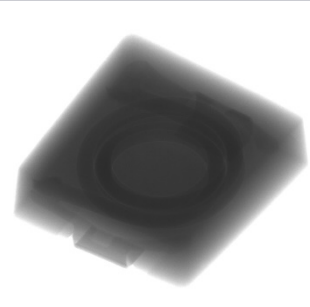


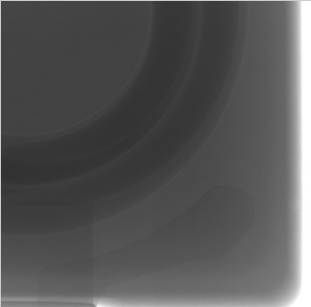
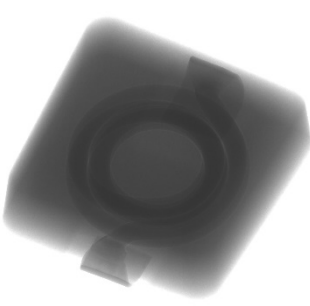

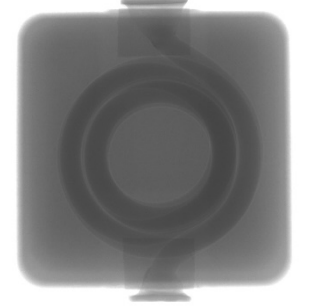
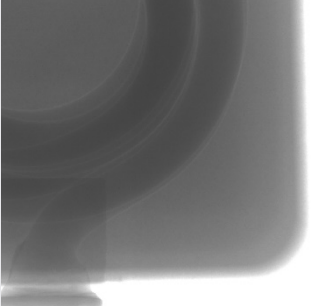
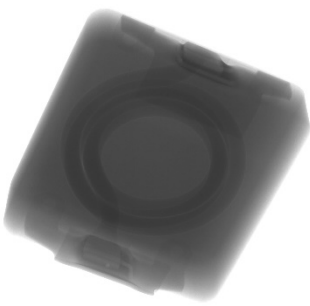

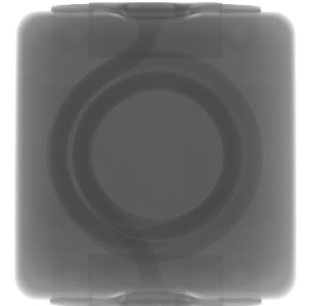
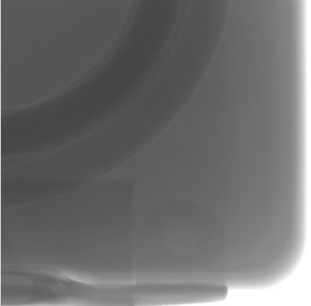
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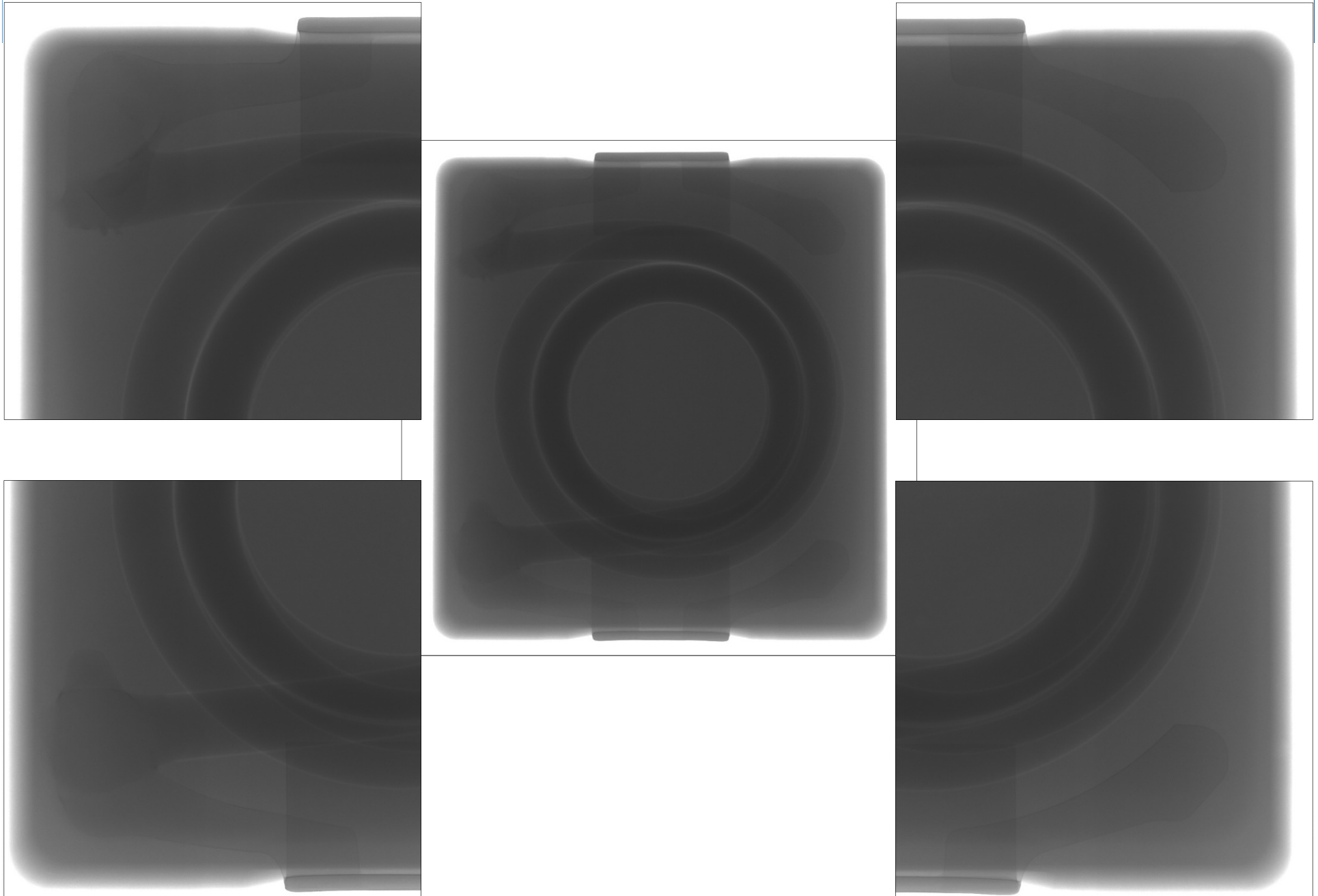
III. X-ray analyses



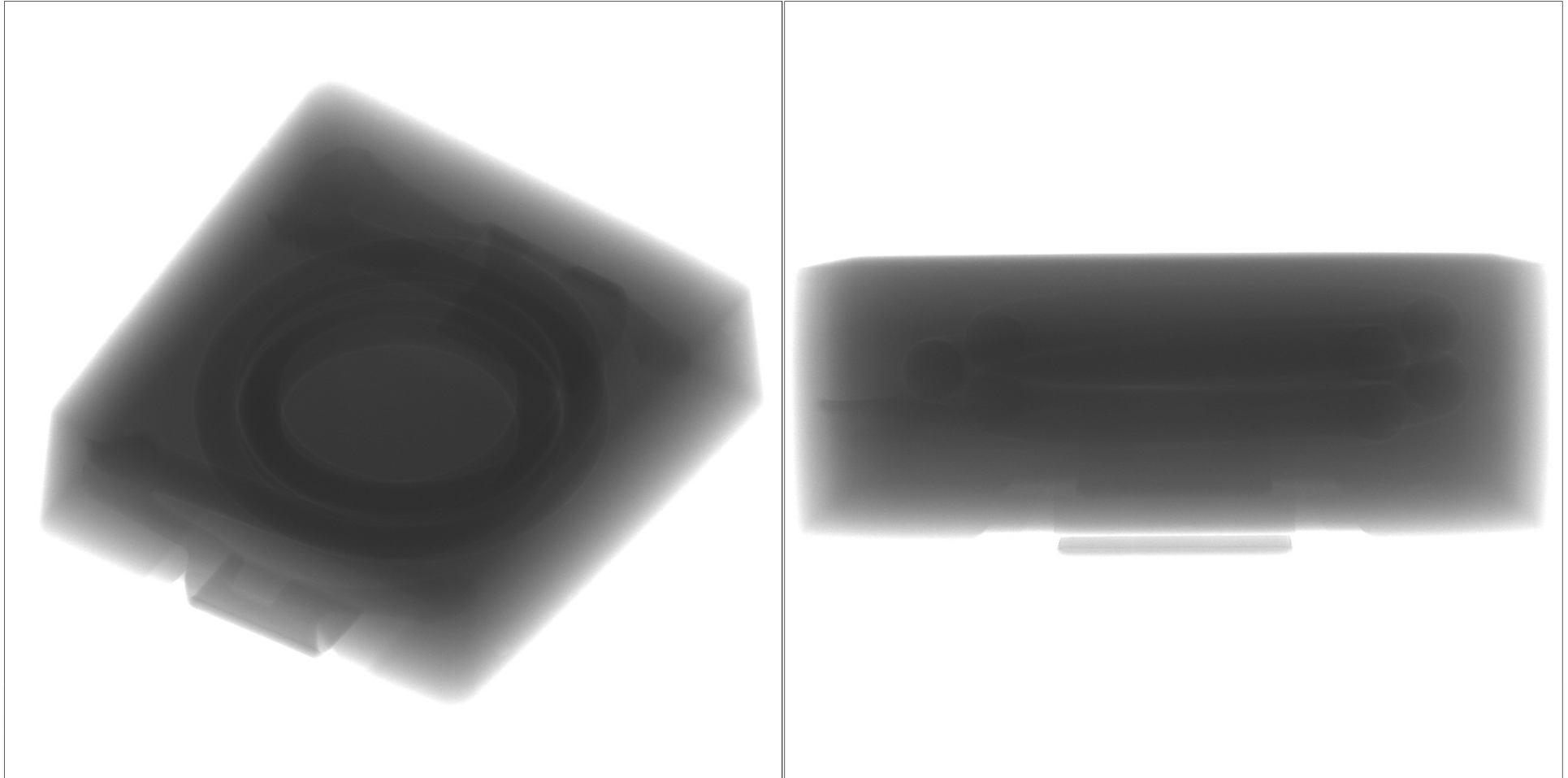
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제조사				
A				
B				
C				

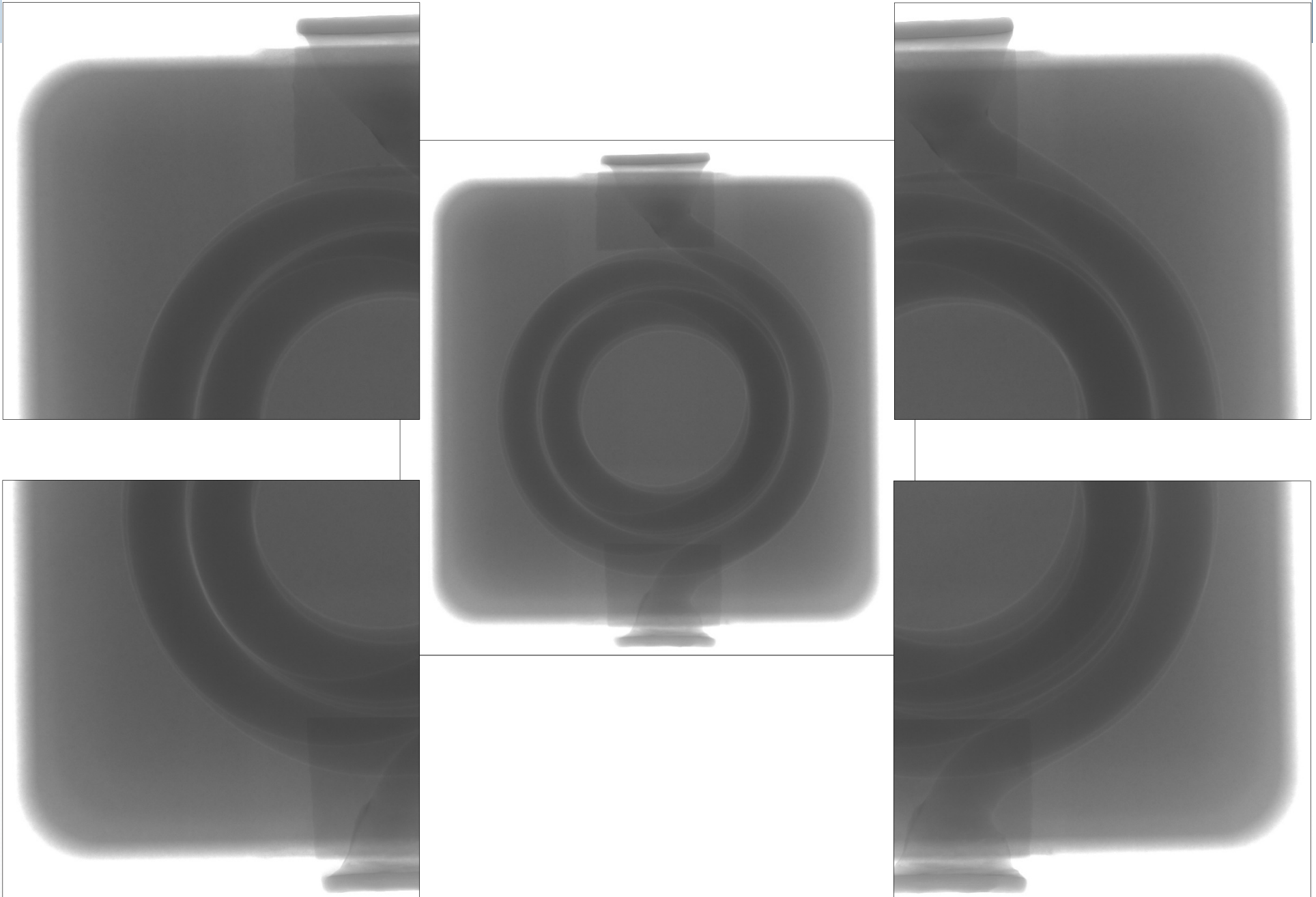
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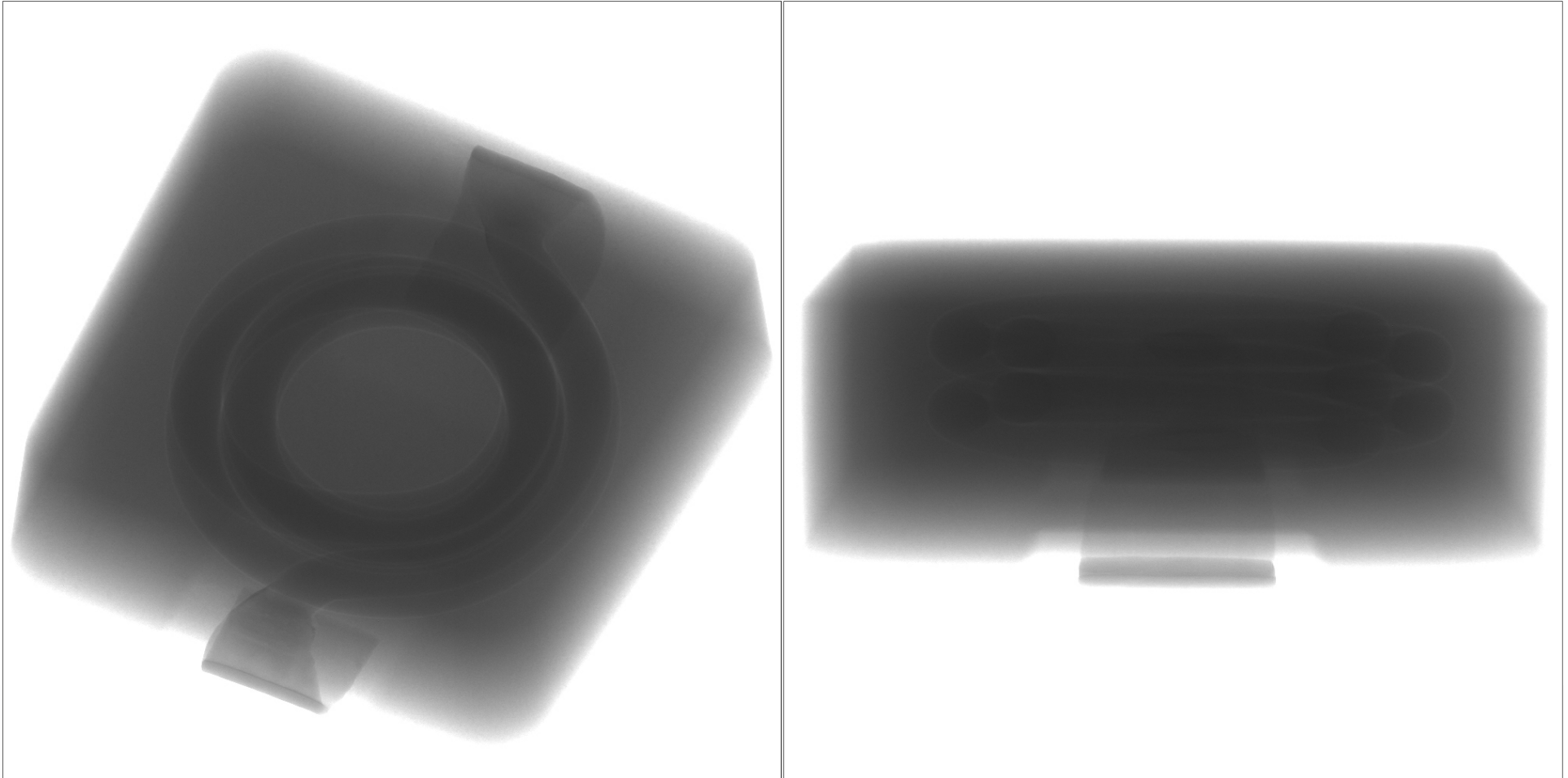
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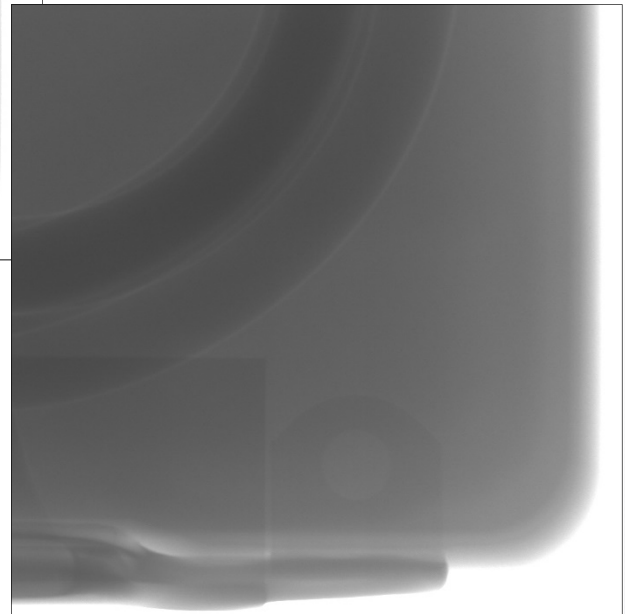
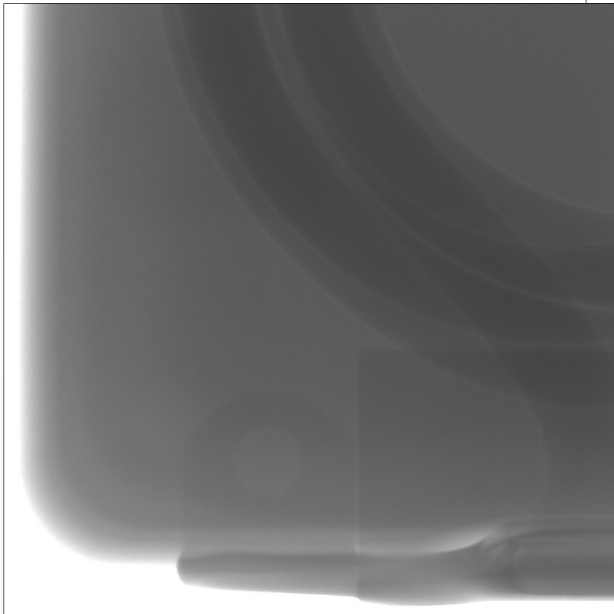
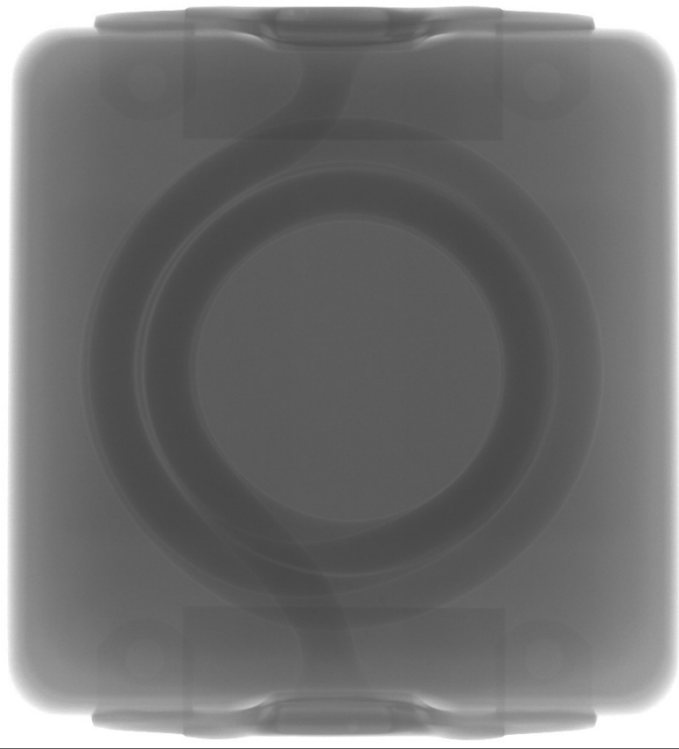
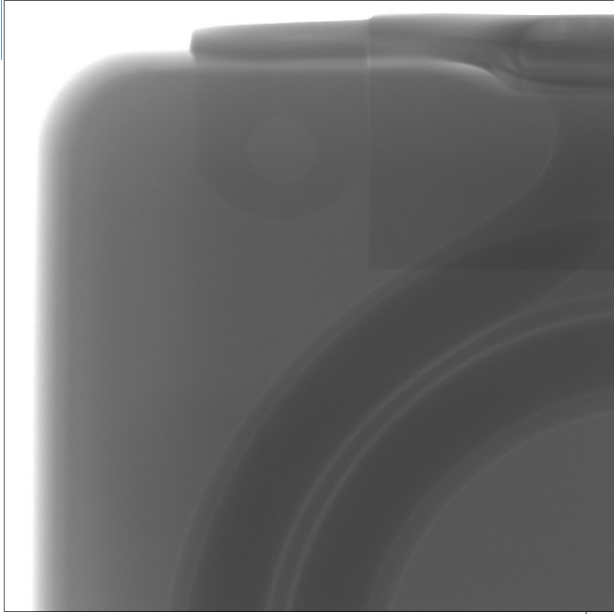
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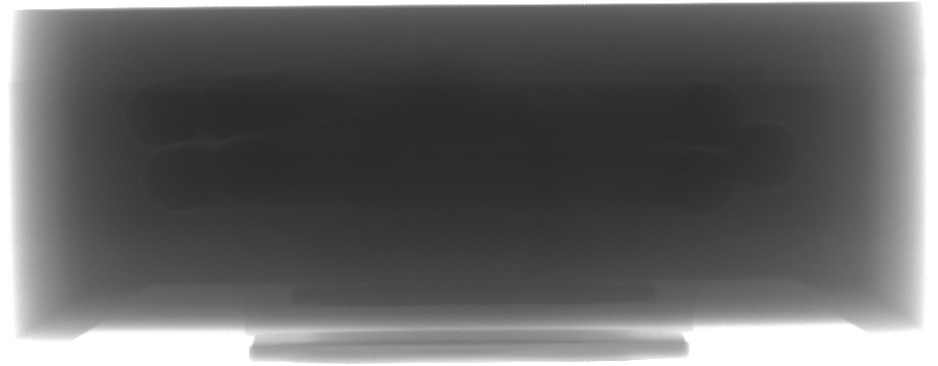
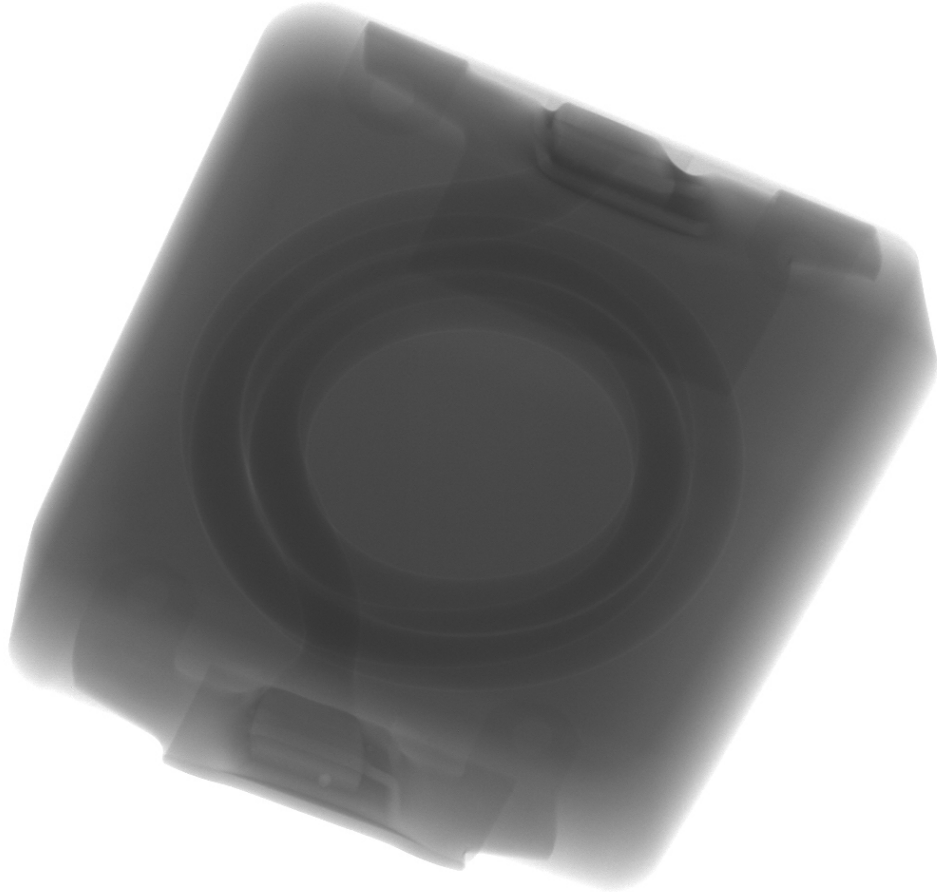
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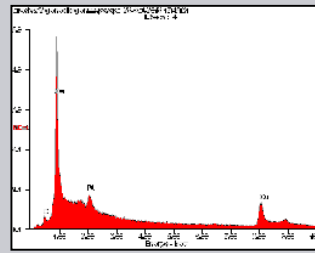
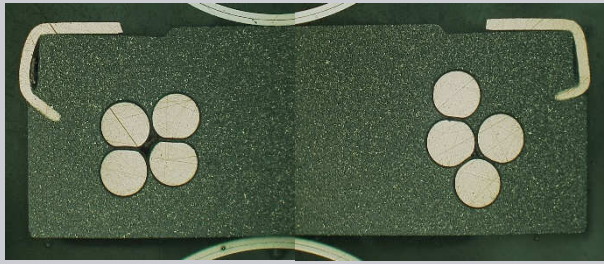
III. SEM analyses



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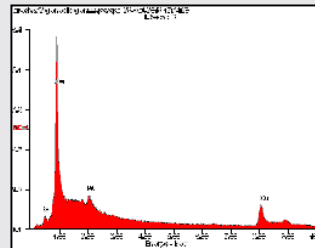
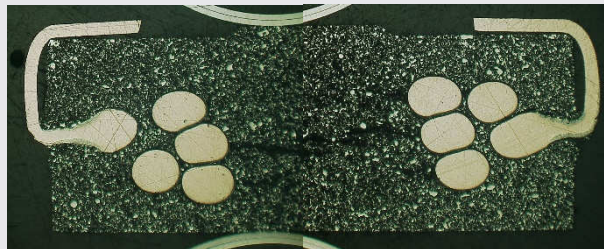
제조사

A



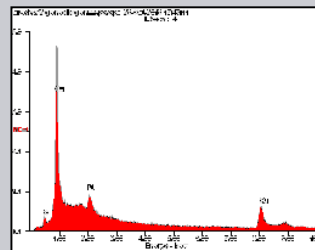
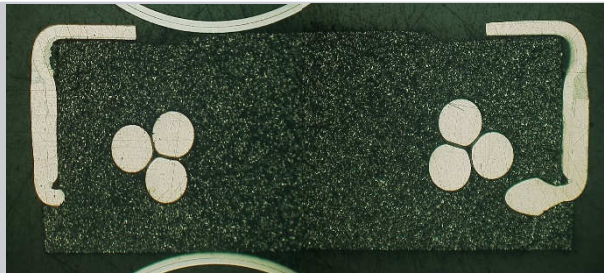
Element	Wt%	At%
O	02.98	12.51
Pt	21.03	07.23
Cu	75.99	80.26

B



Element	Wt%	At%
O	03.10	12.77
Pt	19.03	06.43
Cu	77.87	80.80

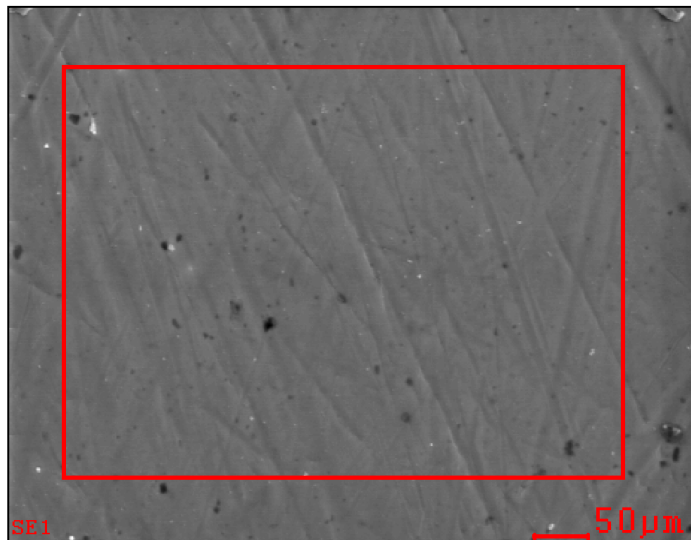
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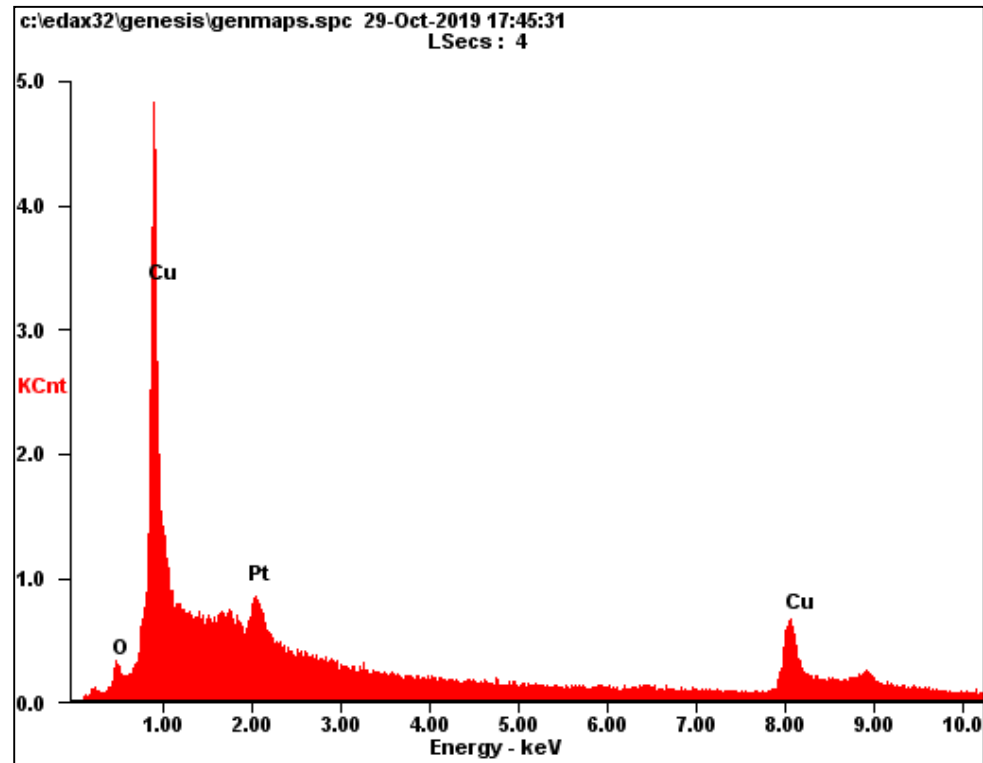
Element	Wt%	At%
O	03.55	14.93
Pt	23.72	08.17
Cu	72.72	76.90

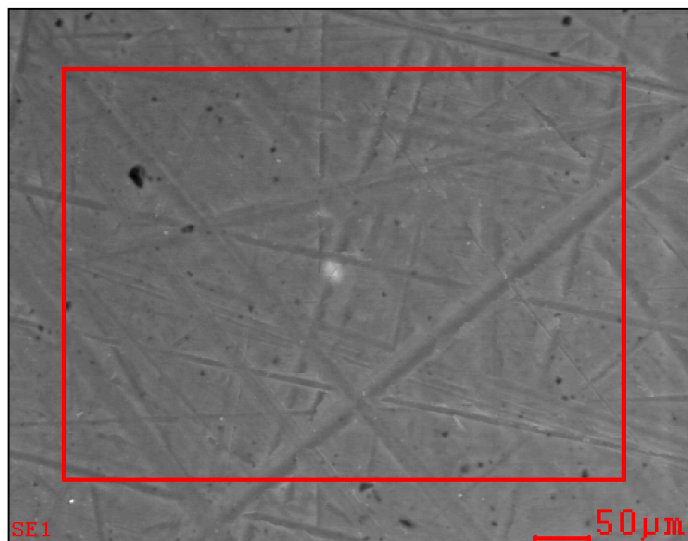
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内部電極の成分分析

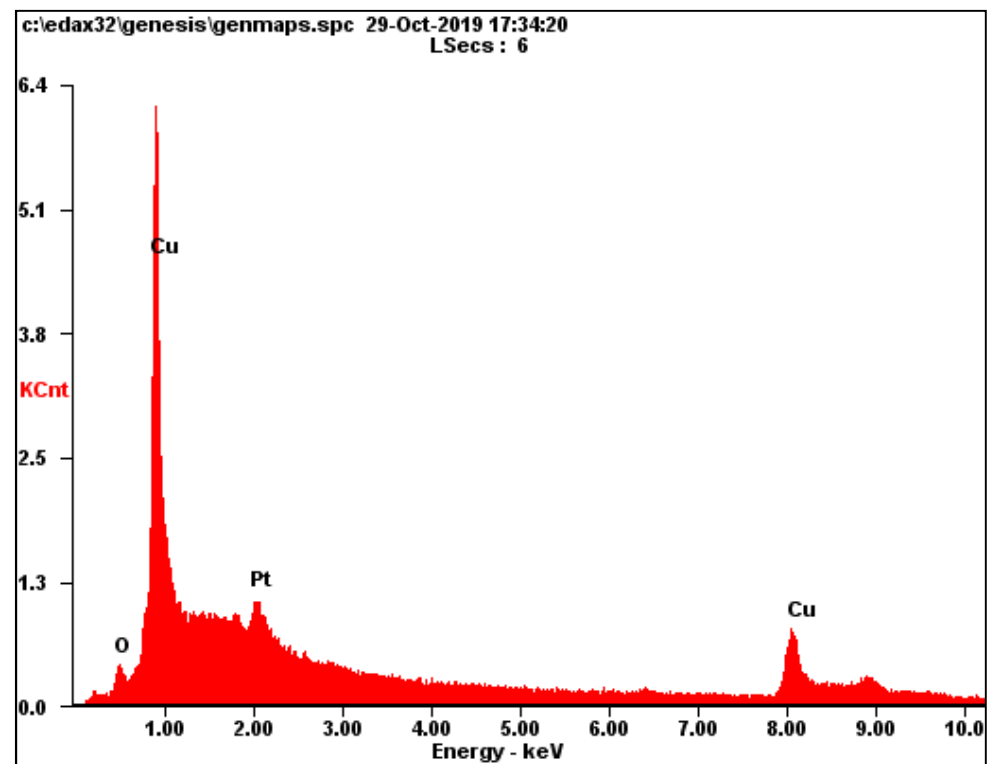


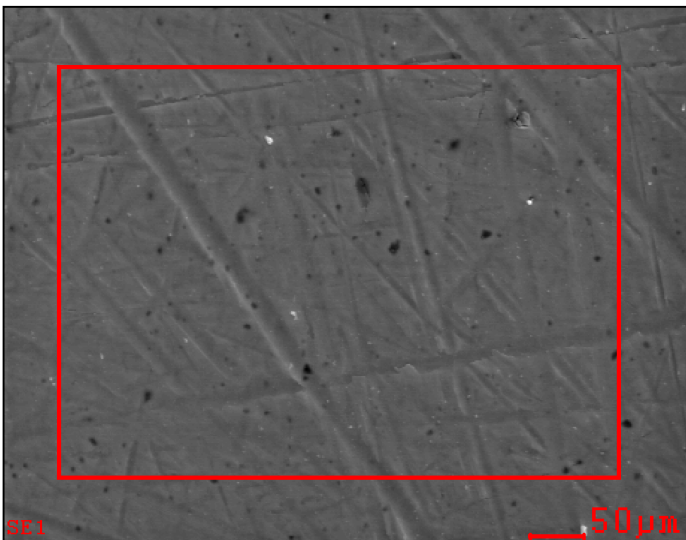
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