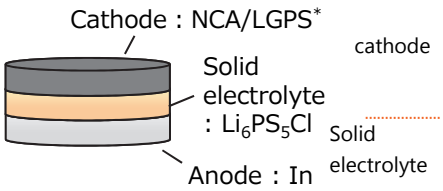
Evaluation items for all solid state battery

Item	Method	Information
Morphology / elemental distribution	SEM-EDX (surface/cross-section)	Morphology, dispersiveness of active material and solid electrolyte
Composition	RBS/HFS/NRA/PIXE	Compositional depth profile (~30 μm)
Interface characterization	Cross-sectional STEM (EELS, EDX)	Detailed elemental distribution at active material / solid electrolyte interface
Ionic conductivity	PFG-NMR, Solid state NMR	Diffusion coefficient, mobility of Li^+
Electronic conductivity	SSRM, TUNA	Mapping of conduction path
Mechanical characteristic	Indentation	Modulus, hardness
Chemical structure	Raman spectroscopy, Solid state NMR	Chemical unit structure
Gas generation	TPD-MS	Gas quantification during annealing
Crystalline structure	XRD	Change of crystalline structure during annealing

Dispersiveness evaluation by EDX mapping

- Low damage observation with high detection efficiency EDX
- Image analysis – visualization and digitalization of active material, solid electrolyte, and pore

Sample : bulk-type all solid state battery

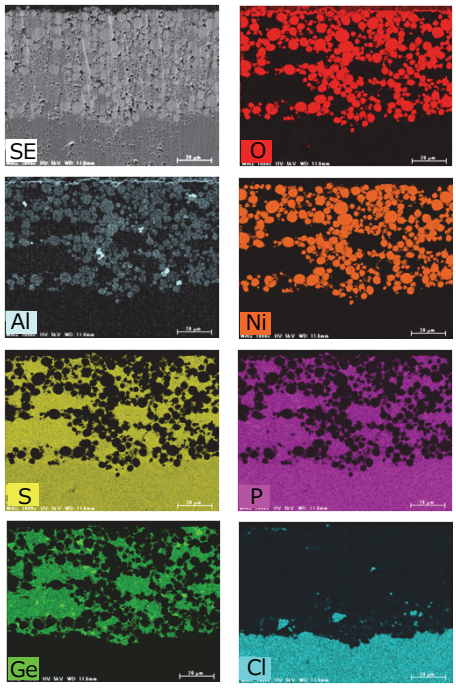


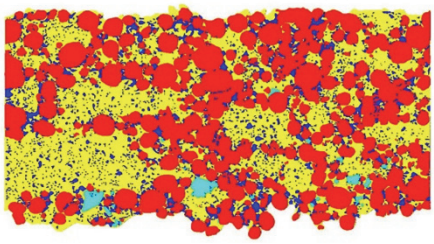
* NCA: $LiNi_{0.8}Co_{0.15}Al_{0.05}O_2$
LGPS:$Li_{10}GeP_2S_{12}$

- 10 mmφ
- Pressing
- Under inert process

Sample:
Dr. M. Tabuchi and Dr. T. Kojima from National Institute of Advanced Industrial Science and Technology (AIST)

EDX map → Visualization / digitalization





	component	Area ratio
	Active material	49.2%
	LGPS	39.1%
	Li_6PS_5Cl	1.3%
	Pore	10.4%

- Dispersiveness, composition ratio of components
- Particle size distribution