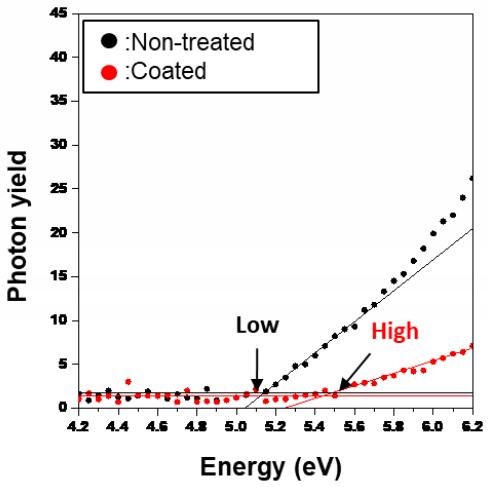
RIKEN KEIKI

# Durability Enhancement for Lithium Ion Battery Cathode Material by Using Surface Coating Treatment




**Ionization potential comparison between coated and non-treatment[1].**

## Electronic conditions analysis of LIB cathode with AC series

Teshima, Zettsu and co-workers measured the ionization potential of lithium ion battery (LIB) cathode material with AC-2 and reported their study on Nature Scientific Reports[1].

Spinel structured cathode material drew a lot of attractions. However, due to its dissolution of Mn ion, the discharge capacity retention of LIB might decrease during the charge/discharge process.

Teshima, Zettsu and co-workers succeeded in enhancing charge/discharge durability by the surface coating treatment of LIB cathode material. The coated cathode material showed a high discharge retention of 97% while the bare cathode material only showed a lower one of 78% after 100 cycles. **Comparing the ionization potential between the coated and the bare sample measured by AC series, it was found that the elution of Mn was blocked due to the higher ionization potential and the less photon yield.**

Using AC-2 can bring you a new sight for the development of LIB cathode materials.

[1] D. Kim, S. Uchida, H. Shiiba, N. Zettsu, K. Teshima, *Scientific Reports*, 8(1), 11771, **2018**;

Photoemission Yield Spectroscopy in Air : PYSA

**Model : AC-2S**

## Features

- **No need for vacuum, can measure in air**
  → No vacuum condition needed, can save the measurement in a low cost. Various types of samples available.
- **Easy operation in a short time**
  → Only 5 min for one measurement, no need for special operation. Best for speedy development.

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