Development of new x-ray absorption spectroscopy measurement
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rea — The x-ray absorption spectroscopy (XAS) is a powerful tool to probe elec-
tronic structure of valence states. However, its conventional measurements such as
total electron yields or fluorescence yields often restrict sample conditions due to
surface sensitivity and charging effects in an insulator or self- absorption effects,
respectively. As an alternative, we found to extract XAS spectra from soft x-ray
reflectivity measurements for transition metal compounds. We performed the soft
x-ray reflectivity measurements on reference transition metal oxides, CoO and NiO,
at Co and Ni $L_{2,3}$-edges, respectively, and successfully extracted the XAS spectrum
using Kramers-Kronig relation from the reflectivity data. In the measurements, the
scattering angle was set to be in specular conditions. Considering that the reflectiv-
ity is a photon-in and photon-out experiment, this result suggests an alternative to
obtain XAS spectra for systems, in which the conventional XAS measurements are
not applicable.

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