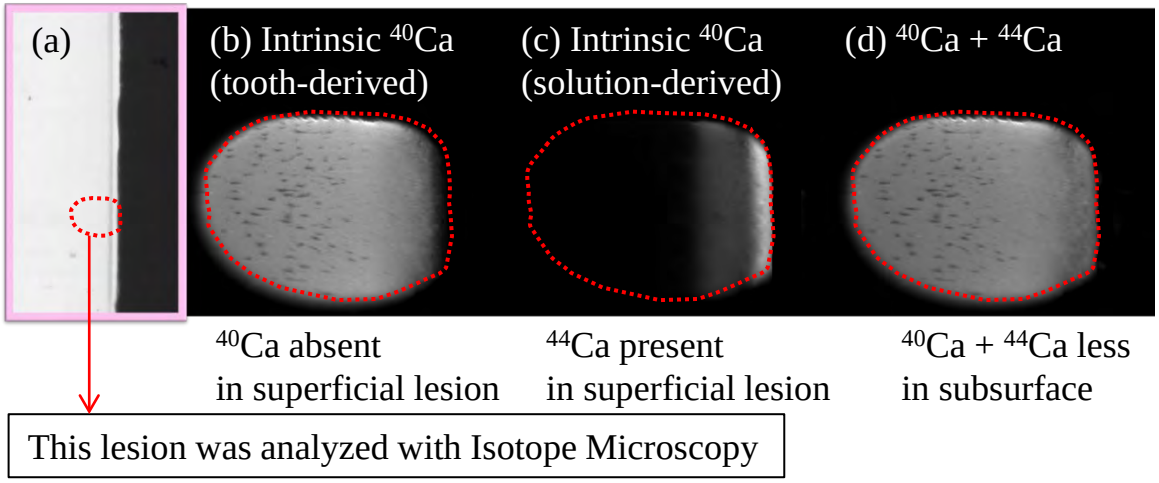
^{44}Ca doped pH-cycling study on Dentin Remineralization by Isotope Microscopy

Intrinsic ^{40}Ca (tooth-derived mineral) and extrinsic ^{44}Ca (solution-derived mineral) are distinguished by ^{44}Ca doped pH-cycling.
The isotope image of ^{40}Ca and ^{44}Ca distribution is revealed by a high mass-resolution stigmatic secondary ion mass spectrometry system.
The uptake of ^{44}Ca (tooth-derived mineral) is great in intensity especially in the superficial lesions.
When fluoride is used, ^{40}Ca (tooth-derived mineral) distribution is absent in the surface lesions.



The pH-cycling was performed for 14 days using ^{44}Ca (a stable calcium isotope) in remineralization solution and fluoride application.

(a) Transverse Microradiography image
(b),(c), (d) Isotope Microscopy image

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