

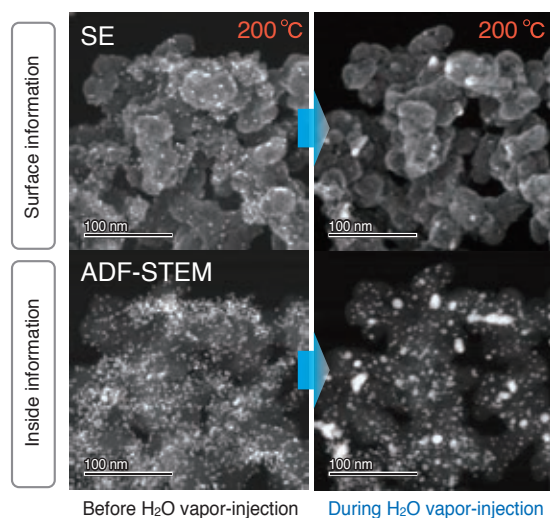
# Field Emission TEM / STEM HF-3300 *in situ* / HD-2700

## PEFC electrode catalyst observations using TEM / STEM

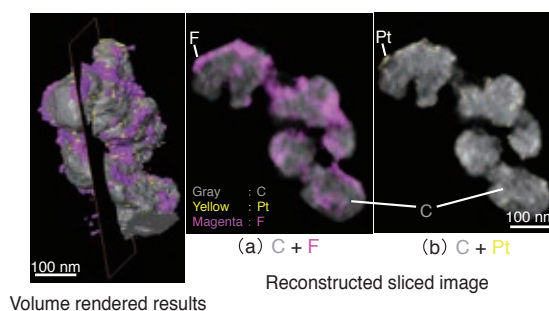


Science for  
a better tomorrow

### Pt / C catalyst *in situ* SEM / STEM observation during H<sub>2</sub>O vapor injection



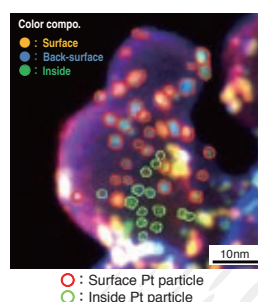
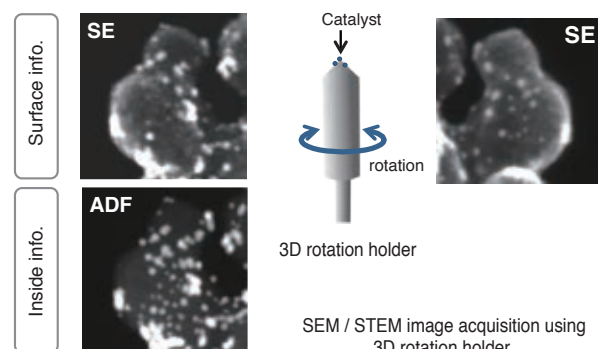
### Ionomer-coated Pt / C catalyst 3D EDX tomography



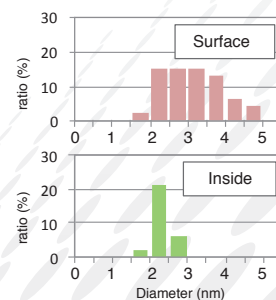
Ionomer-coated Pt	1,083 pcs.
Non ionomer-coated Pt	355 pcs.
Ionomer-coated Pt ratio	75.3 %

Instrument : HD-2700A + 100 mm<sup>2</sup> SDDx2 + 3D rotation holder  
Vacc. : 80 kV  
Rotation angle : 0~125°@ 5°step x 26 images

### Pt / C catalyst approximate 3D particle-size distribution using SEM / STEM image processing



Pt particle site-identification using color compo. image



Pt particle-size distribution



*In situ* real-time observation of catalyst nanoparticles under heated & gas-injected environment.  
Simultaneous SEM & STEM imaging yields surface & inside information simultaneously !!



Dual EDX dramatically-improving EDX analysis sensitivity & throughput.  
Simultaneous SEM / STEM imaging has been achieved with aberration correction !!