New Neutron Imaging Facility At The NIST Reactor For Fuel Cell Research

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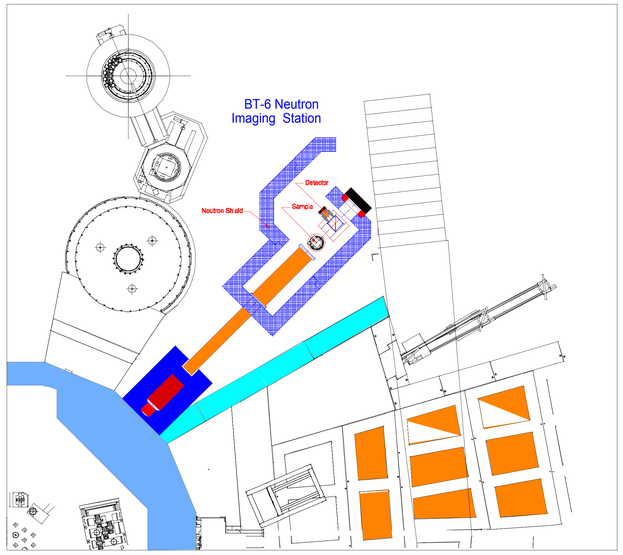
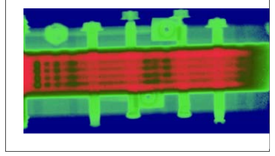


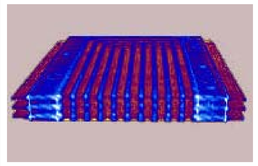
New Neutron Imaging Facility at NIST

FEATURES

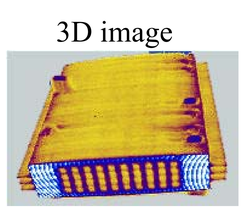
- Funded by DOE and NIST
- Operational in July, 2002
- Designed to visualize and quantify water and hydrogen distributions in PEM ,GDL, flow channels and interfaces in near real time
- Time resolution near 1sec
- Spatial resolution near 10 μm (best value).
- Sample size up to 30 cm x 30 cm

3 membrane fuel cell

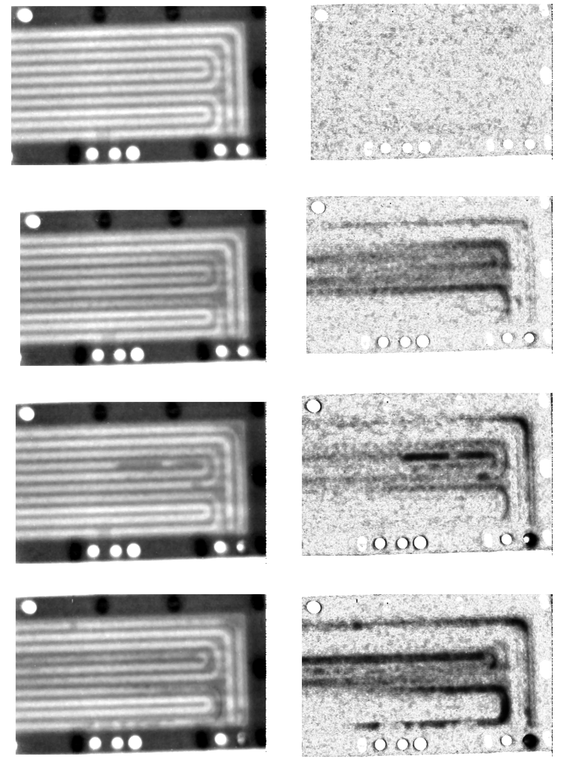




3D image



Water Distribution in flow channels vs. Time



DRY

10 secs

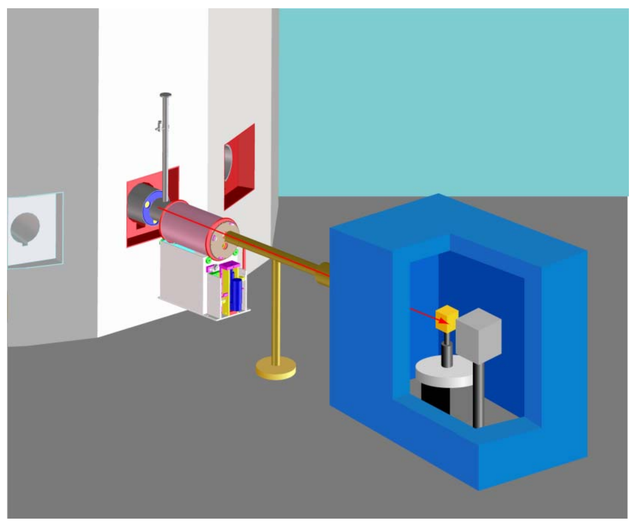
200 secs

400 secs

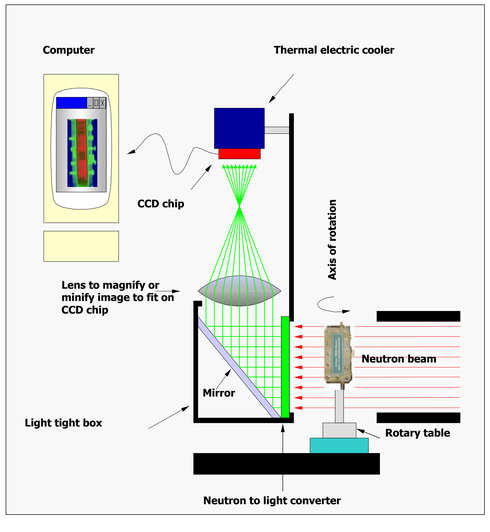
800 secs

WET

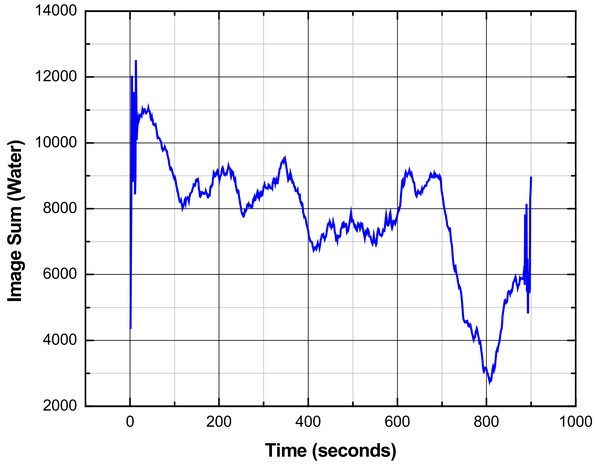
Flow Channel + Water **Water only**



3-D view showing filter and shutter



Detector Assembly



Amount of water quantified by total image sum

- Decrease in sum results from production of water
- Increase in sum results from drainage
- Overall trend trend indicates a water buildup
- Buildup of water drastically lowers efficiency