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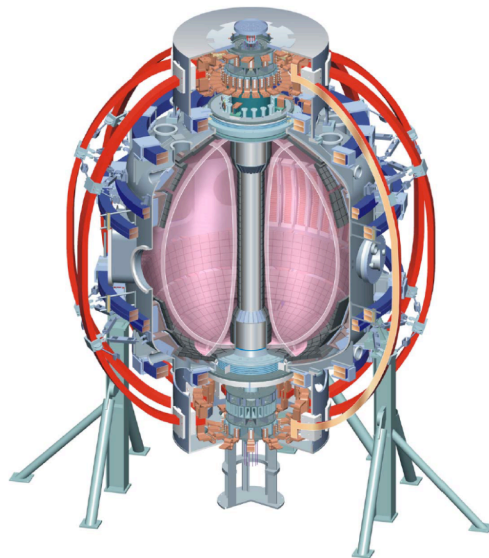
SEM K-Xray Analysis of Silicon Coupon and Sample

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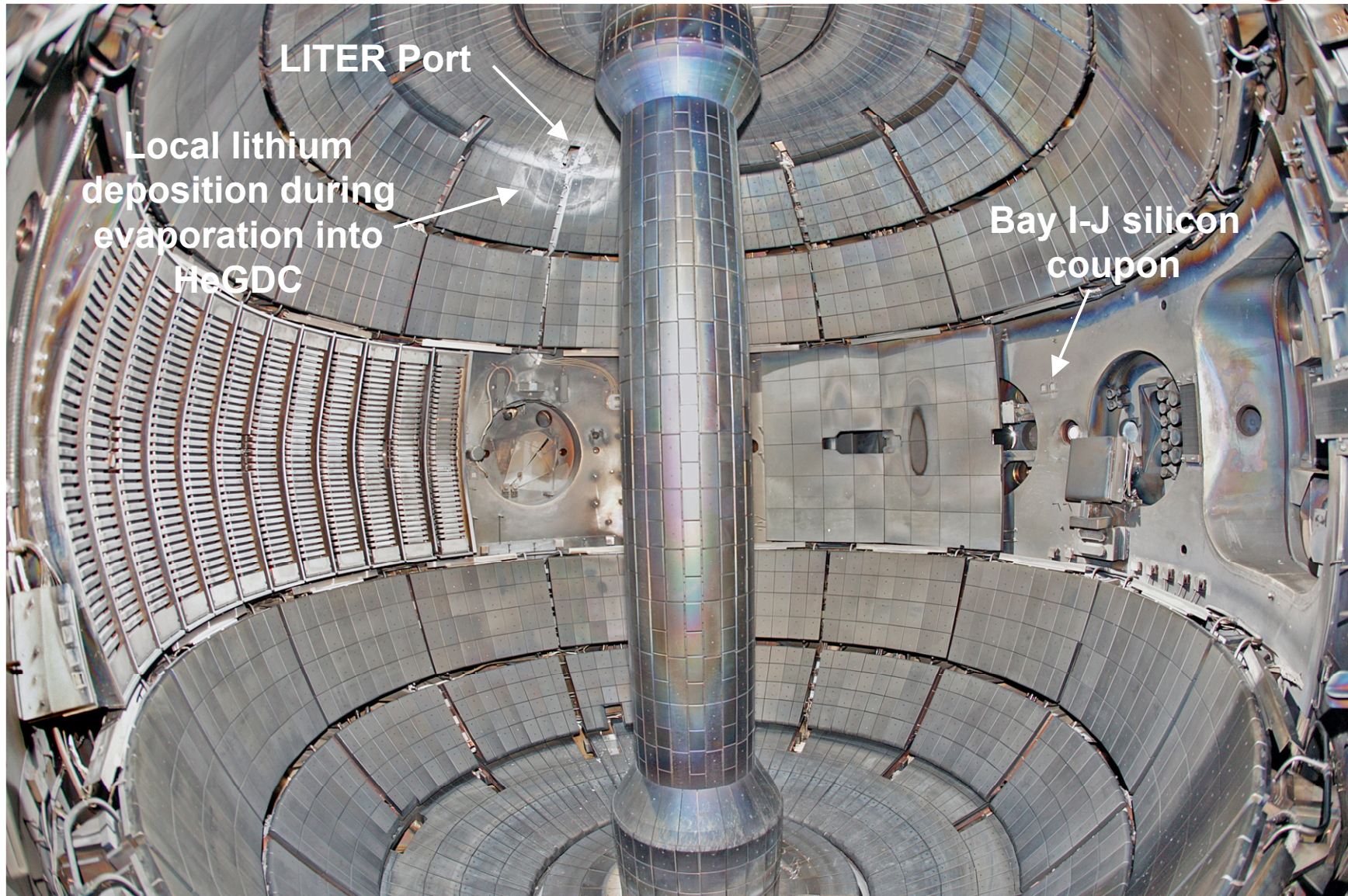
NSTX Program Meeting
Aug 09, 2007
PPPL, Princeton, NJ

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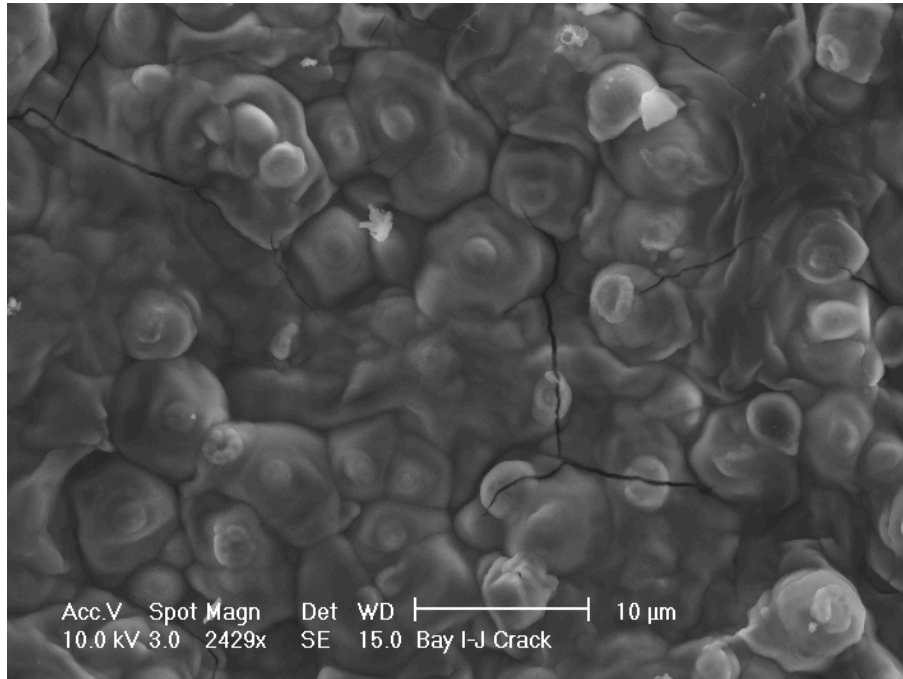
FY07 NSTX Vessel Interior After ~100g Lithium Evaporation from LITER



With 10 μm SEM Resolution, Bay I-J Midplane Coupon and Bay-F LITER Sample Exhibit Different Morphologies

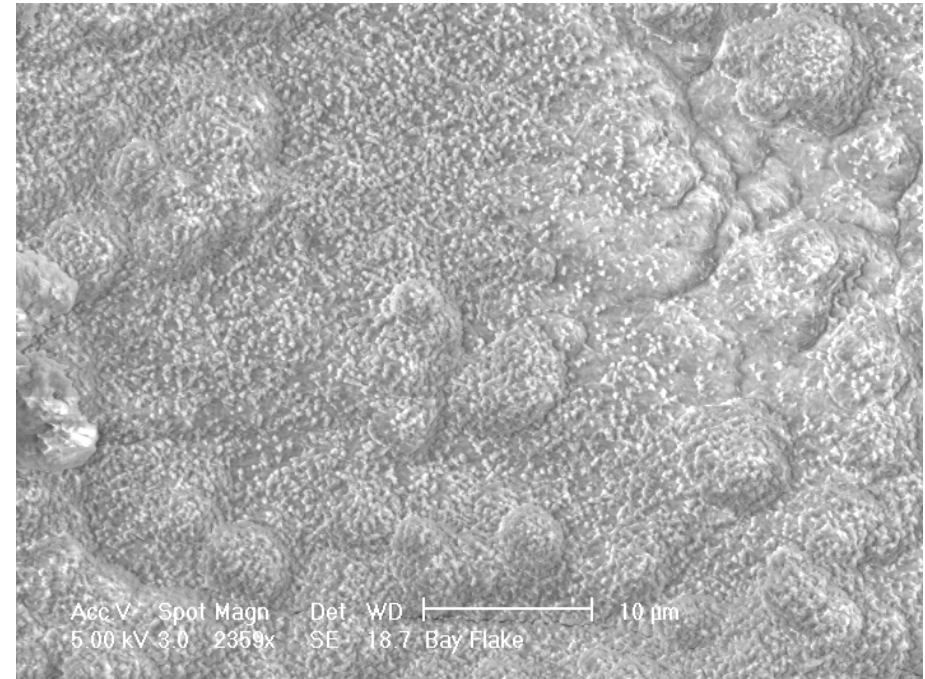


Li Deposition During Plasma



- Photo using 10 kV SEM at 10 μm resolution of Bay I-J Midplane silicon coupon showing Li nucleation clustering.

Li Codeposition During HeGDC



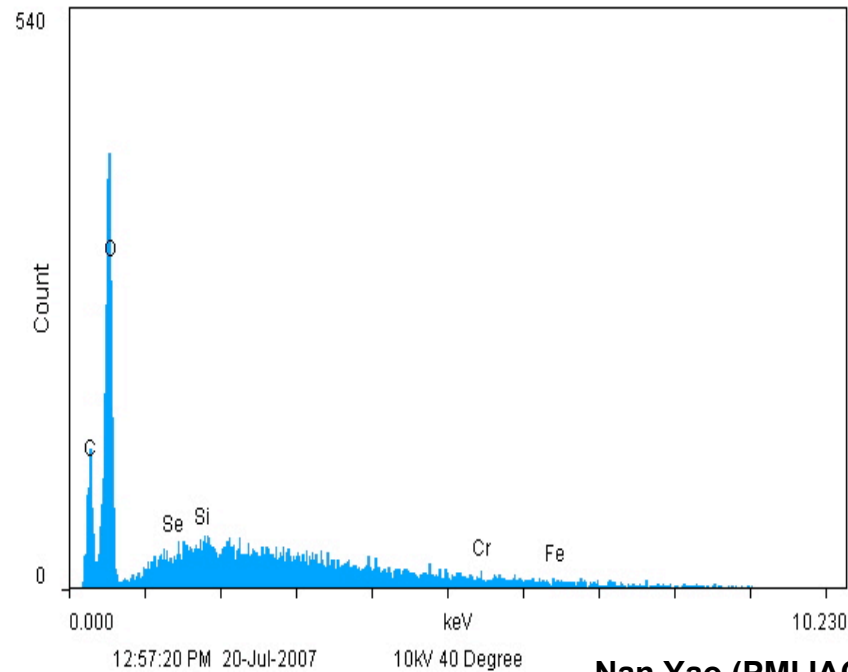
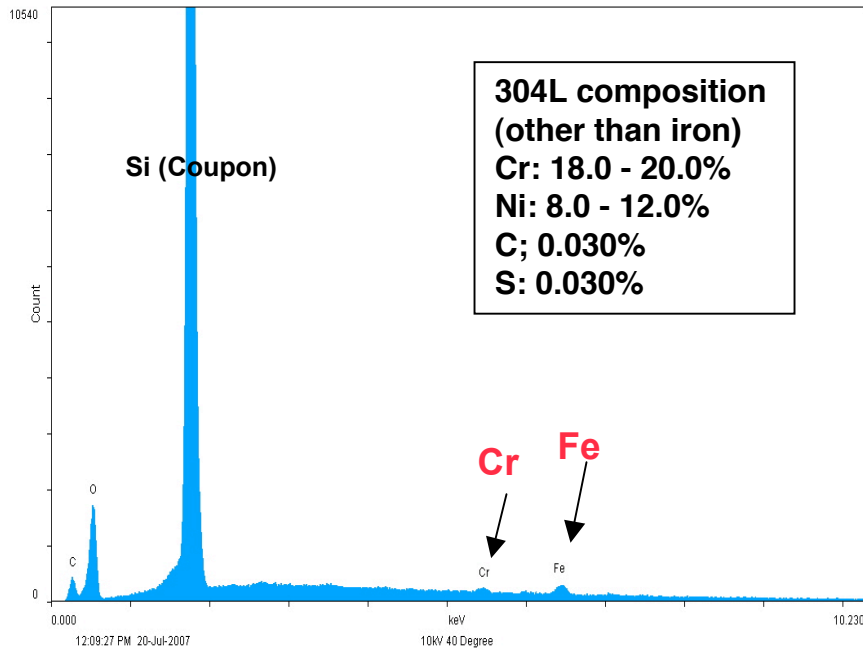
- Photo using 10 kV SEM at 10 μm resolution of Bay F Upper Divertor thick flake obtained from the local lithium HeGDC buildup near the output of LITER showing finer Li nucleation during codeposition.

- Bay I-J Midplane Coupon Exhibits Fe and Cr Deposition
- Thick Flake Sample at LITER Output Shows No Metals



• The K-Xray spectrum of the Bay I-J Midplane Silicon Coupon exhibited C, O, Si (coupon) and small amounts of Cr and Fe. No Ti Ni, or Mo were observed.

• Bay F Upper Divertor thick flake obtained from the local lithium HeGDC buildup near the output of LITER exhibited only C, O, and no Si (coupon) and no Cr, Fe, or other metals.



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• This result is consistent with the deposition of typical plasma impurities on the Midplane Coupon and no metal output from LITER.

Summary and Conclusions



- A midplane silicon coupon and a thick flake obtained from the local lithium HeGDC buildup near the output of LITER were analyzed with 5, 10, and 20 kV SEM K-Xray excitation with 140eV detector resolution.
- The preliminary result is consistent with the deposition of typical plasma impurities on the Midplane Coupon and no metal output from LITER.
- Work is in progress to evaporate the entire remaining 35 g of Li in LITER_1d_u1 and perform similar analysis for metal deposition on sample coupons.