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Title: **Time resolved measurements of deposition and dust in NSTX***

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Tritium codeposition and dust accumulation may impact the operation of next-step devices such as ITER and measurements in contemporary tokamaks are important to gain a predictive understanding that can help mitigate the associated risk. We will discuss results from three diagnostics that address these issues. Incandescent particles have been observed by fast cameras moving at 10-100 m/s in some NSTX plasmas. The particle trajectories appear to be complex including velocity reversal, and particle breakup. We also have developed a novel electrostatic device to detect dust on remote surfaces[1,2]. Recent laboratory work with ultra-fine 25 μm trace spacing has shown 1 μg/cm2 sensitivity with information on the particle size in the detected waveform. Quartz crystal microbalances have been deployed in NSTX to measure pulse-by-pulse deposition at various locations[3]. In 2005 the microbalances were relocated to locations closer to the plasma and observations from the current campaign will be reported.

[1] A. Bader et al., Rev. Sci. Instrum., 75, (2004) 370.
[2] C. Voinier et al., J. Nucl. Mater. in press (2005)
[3] C. H. Skinner et al., J. Nucl. Mater., 337-339 (2005) 129.