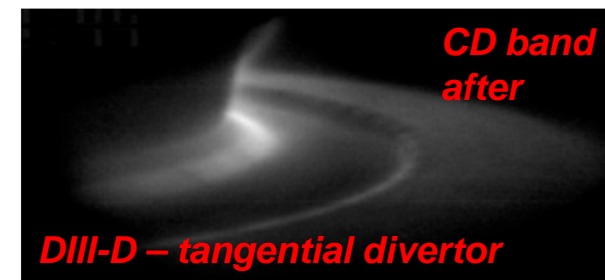
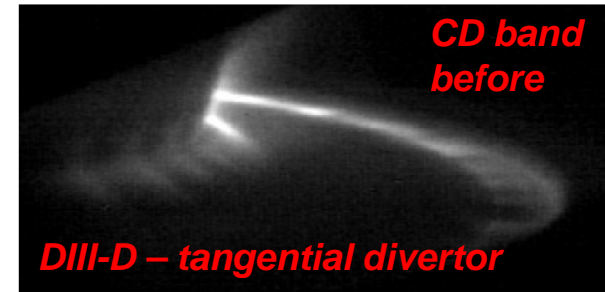
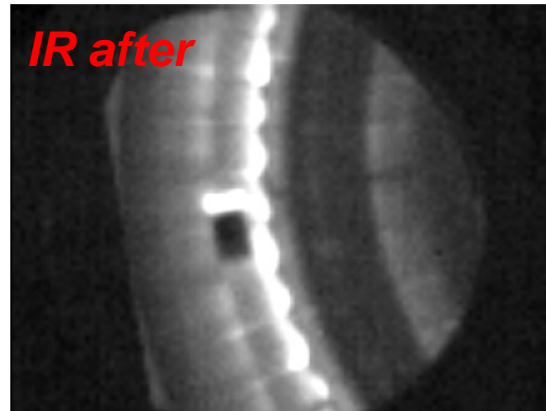
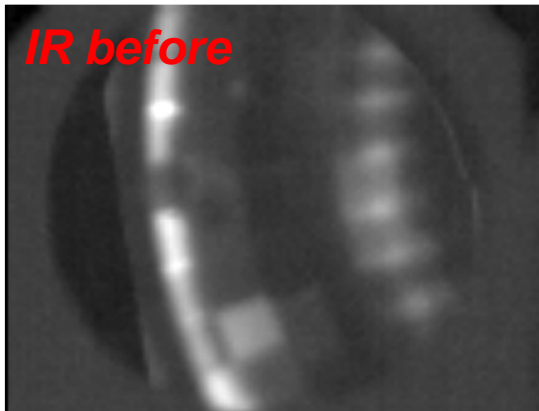


# Improving tile alignment in the divertor might help reduce carbon sources

- Reducing carbon accumulation is critical for NSTX ELM-free regimes
- **Improving tile height alignment** and **reducing gaps** could help reduce C source (and reduce chance of melting Moly)
- In DIII-D, better tile-to-tile alignment in upper (2000) and lower divertor (2006)
- Tile gap reduced (2.4  $\rightarrow$  0.4 mm), top surface alignment improved (1.0 $\rightarrow$ 0.1mm)
- More uniform C sources and more even tile heating
- Reduction of core C content observed in DIII-D (not clear if only due to this though)

## DIII-D – IR divertor top-down view



C. J. Murphy, et al. *Fusion Science and Technology* 52 (539), 2007.  
M. A. Mahdavi et al, *Journal Nucl. Mater.* 290-293(2001) 905-909.

# Height non uniformity and leading edges seen in the lower divertor graphite tiles

- Height variations and leading edges of graphite tiles are visible on vis. cameras on both **inboard** and **outboard divertor** (bull-nose and diagnostic tiles).
- Can result in heating of tile edges and increased C influxes
- Possibly worse in NSTX-U due to higher heat fluxes

