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Diagnosing and controlling mix in NIF implosion experiments
B.A. HAMMEL, H.A. SCOTT, M.A. BARRIOS, C. CERJAN, D.S. CLARK, M.J. EDWARDS, S.H. GLENZER, S.W. HAAN, N. IZUMI, J.A. KOCH, O.L. LANDEN, T. MA, L.J. SUTER, Lawrence Livermore National Laboratory, S.P. REGAN, R. EPSTEIN, University of Rochester, G.A. KYRALA, Los Alamos National Laboratory, K. PETERSON, Sandia National Laboratories — High mode number instability growth of "isolated defects" on the surfaces of NIF capsules can be large enough for the perturbation to penetrate the imploding shell and produce a jet of ablator material that enters the hot-spot. Since internal regions of the CH ablator are doped with Ge, mixing of this material into the hot-spot results in a clear signature of Ge K-shell emission. Evidence of jets entering the hot-spot has been recorded in x-ray images and spectra, consistent with simulation predictions.[1] Ignition targets have been designed to minimize instability growth, and capsule fabrication improvements are underway to reduce "isolated defects." An experimental strategy has been developed where the final requirements for ignition targets can be adjusted through direct measurements of mix and experimental tuning.

[1]B. A. Hammel, et al, High Energy Density Physics **- 6** (- 2) (2010). Prepared by LLNL under Contract DE-AC52-07NA27344.

Bruce Hammel
Lawrence Livermore National Laboratory

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