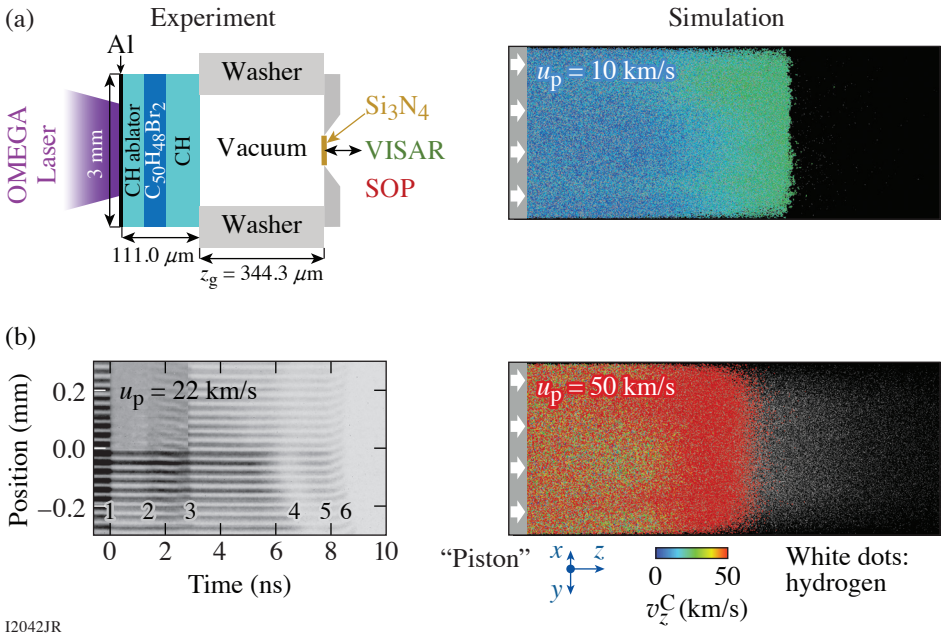
About the Cover:

The cover photo highlights the research on polystyrene (CH) shock release that combines computation and experiments, led by Dr. S. Zhang (LLE) and Dr. D. E. Fratanduono (LLNL), respectively. The top image is a snapshot of the simulation cell showing separation between carbon (color-coded according to their velocities) and hydrogen (white-colored dots) species during the shock release of CH (with u_p = 20 km/s); the bottom image is a view of the target during shot 64742.

In the figure to the right, the experimental target design (a) prevents radiation preheat of the sample and employs a witness foil to investigate the release of shocked CH across a vacuum gap. VISAR reflectivity (b) was observed to change (at the time numbered "4") before fringe shifts (at the time numbered "5"), and similar changes were observed in all experiments of plastics shocked to above 550 GPa, but not in experiments of pure diamond or beryllium. These observations are all consistent with species separation and hydrogen streaming predicted by molecular-dynamics simulations, which were found to occur upon shock breakout and during the release of CH under strong shocks (u_p = 15 km/s or faster, corresponding to 350 GPa or highter) but absent for weak shocks (u_p = 10 km/s or slower, corresponding to 150 GPa or lower.)



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For questions or comments, contact Erik Power, Editor, Laboratory for Laser Energetics, 250 East River Road, Rochester, NY 14623-1299, (585) 275-0548.

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