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The Molecular Splash Test: when applied physics help stroke patients. CEDRIC HURTH, LENA VAN NIMWEGEN, DEEPTHI JAMPALA, Applied Nanobioscience, Biodesign Institute, KRIS VIJAY, Scottsdale Clinical Research Institute, FREDERIC ZENHAUSERN, Applied Nanobioscience, Biodesign Institute — The Molecular Splash Test (MST) stems from recent observations of a solid sphere producing a splash when impacting a liquid (Bocquet et al, 2007, *Nature Physics*, **3**, 180). We have developed the experimental setup incorporating a high-speed camera operated at 8,000 frames/s to perform biologically-relevant experiments, e.g. rheology studies from the impact of a native glass bead and molecular recognition tests when the impacting bead is functionalized with biomarkers. We present preliminary results with millimeter-sized glass beads impacting water mixtures of increasing glycerol content, i.e. increasing viscosities, as well as biotin-modified glass beads impacting avidin solutions (0.1 – 1 mg/mL). The viscosity increase of a human blood sample containing heparin, once heparinase II is added to re-induce coagulation, is monitored over time to assess the ability of MST to function on samples of medical interest. The beads can then be derivatized with an antibody for detection of C-reactive protein in blood serum.

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