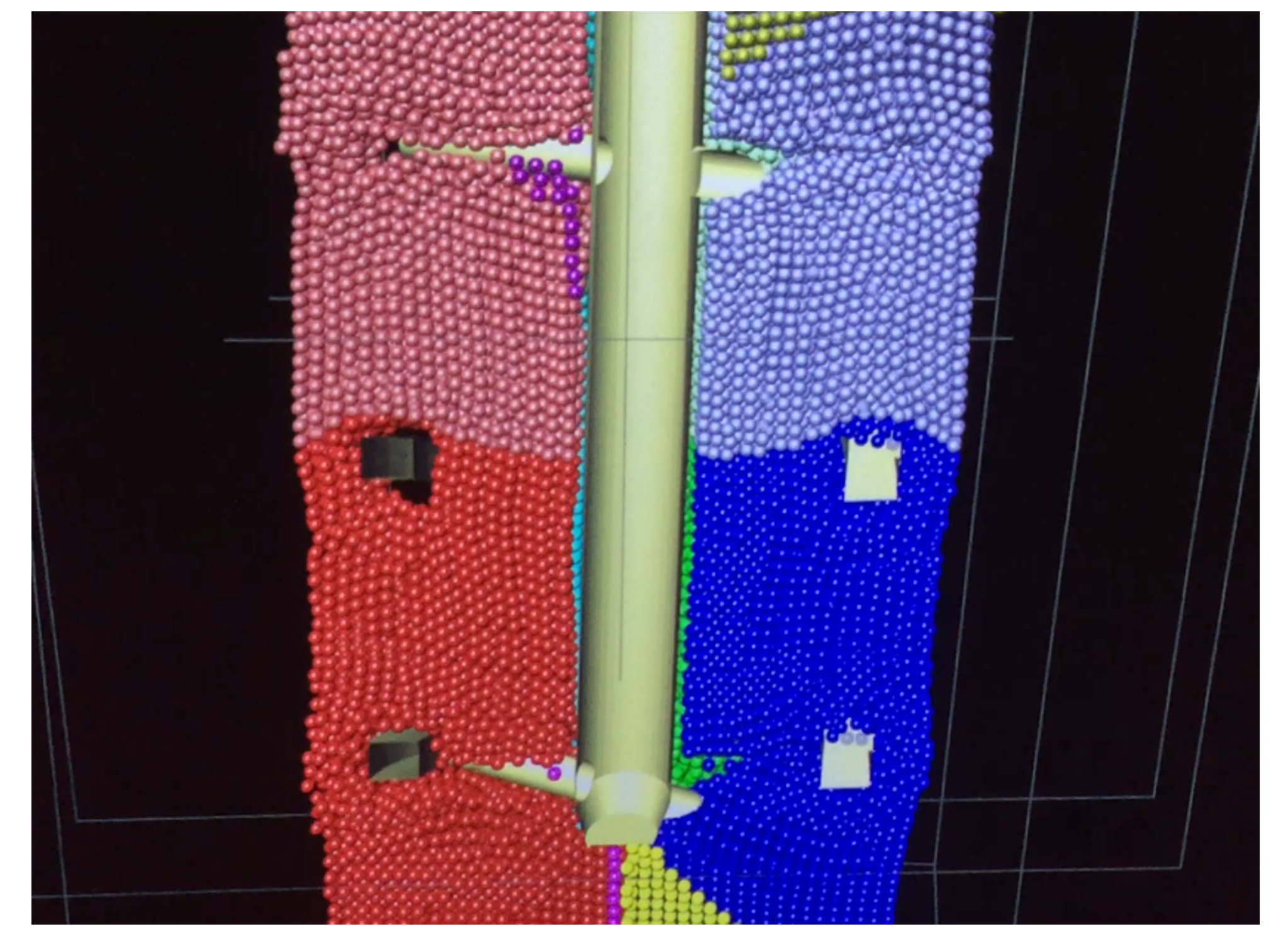
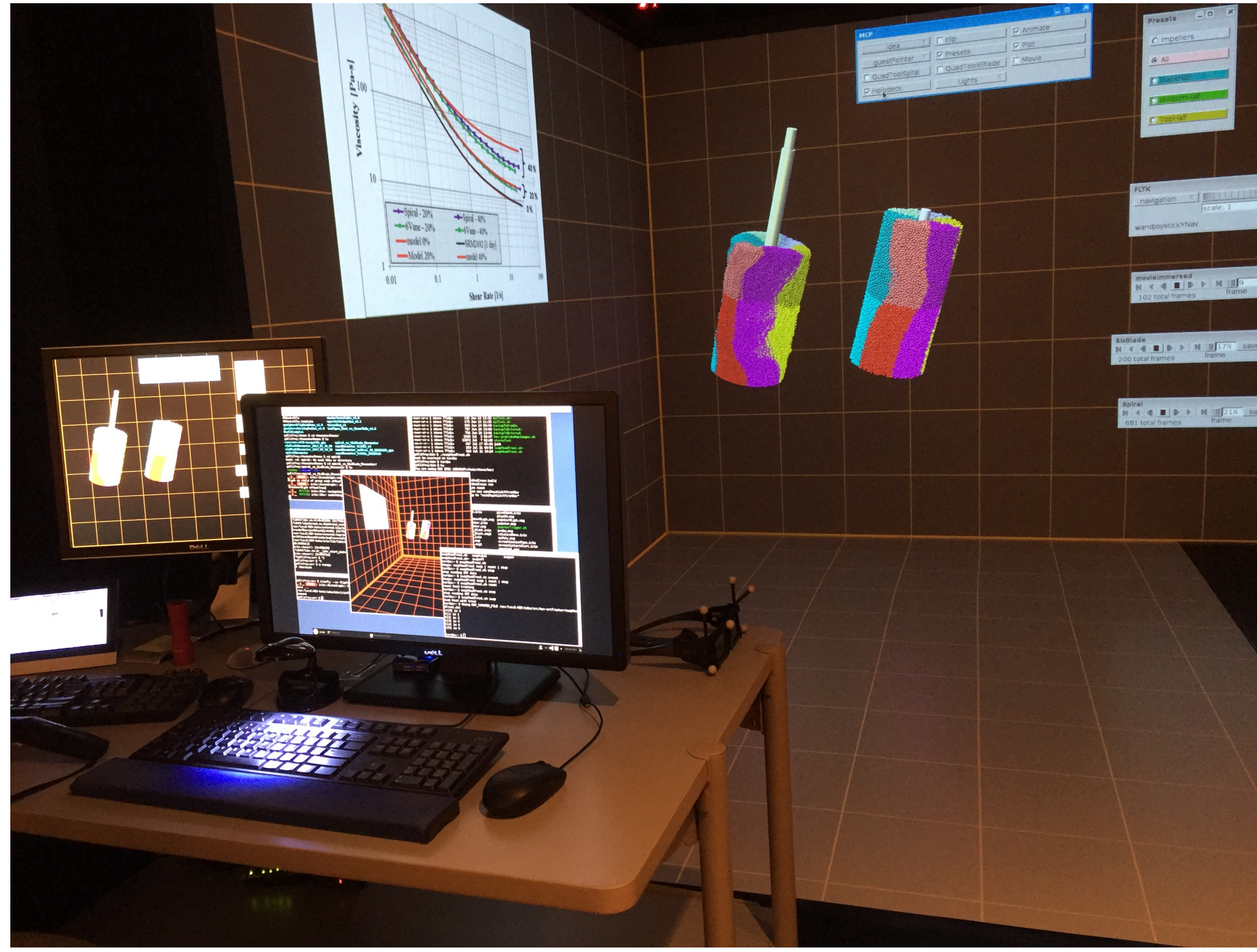
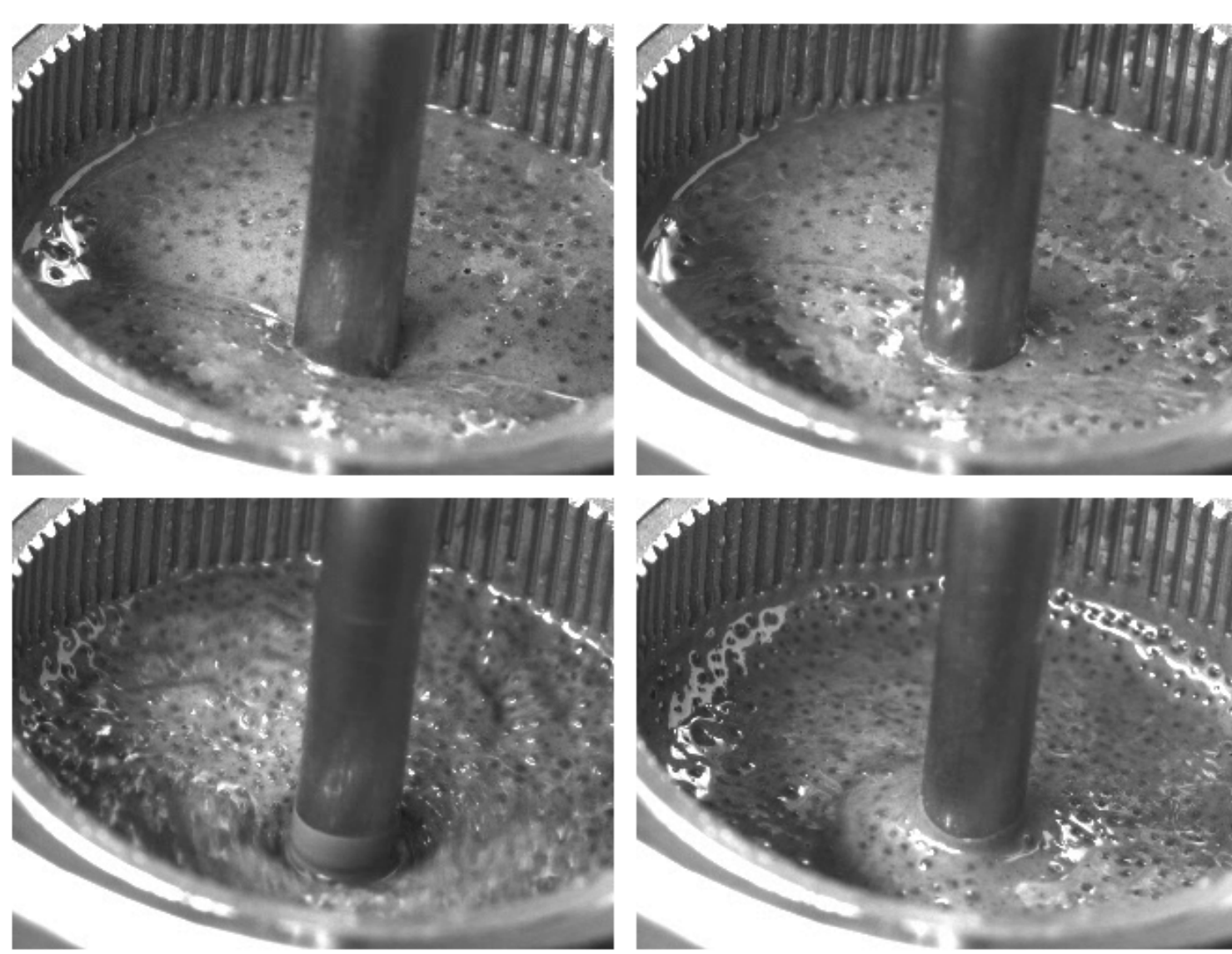


Standard Reference Materials for Concrete Rheology: Modeling and Visualization

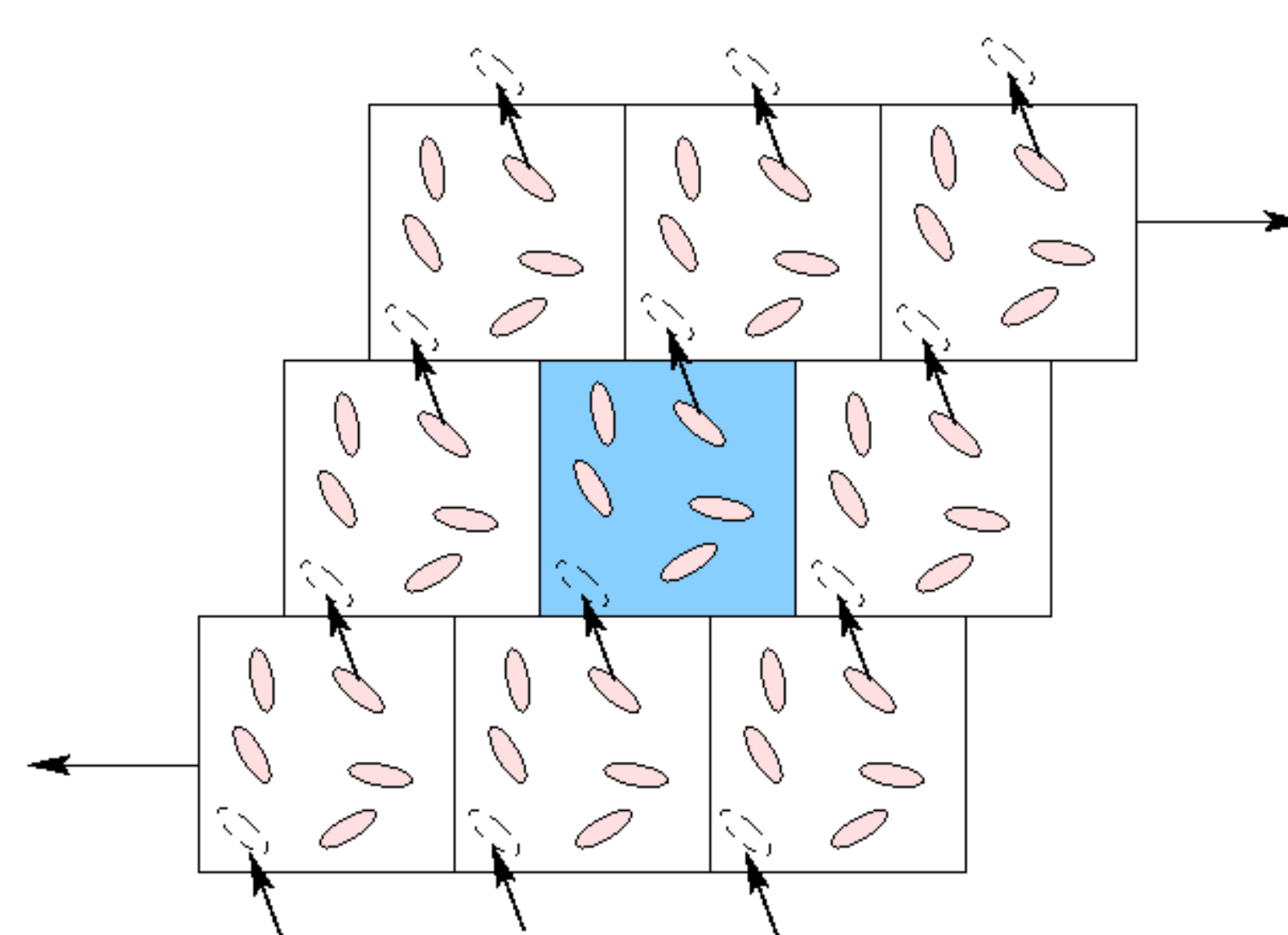
Steven G. Satterfield William L. George Nicos S. Martys Chiara F. Ferraris Judith E. Terrill



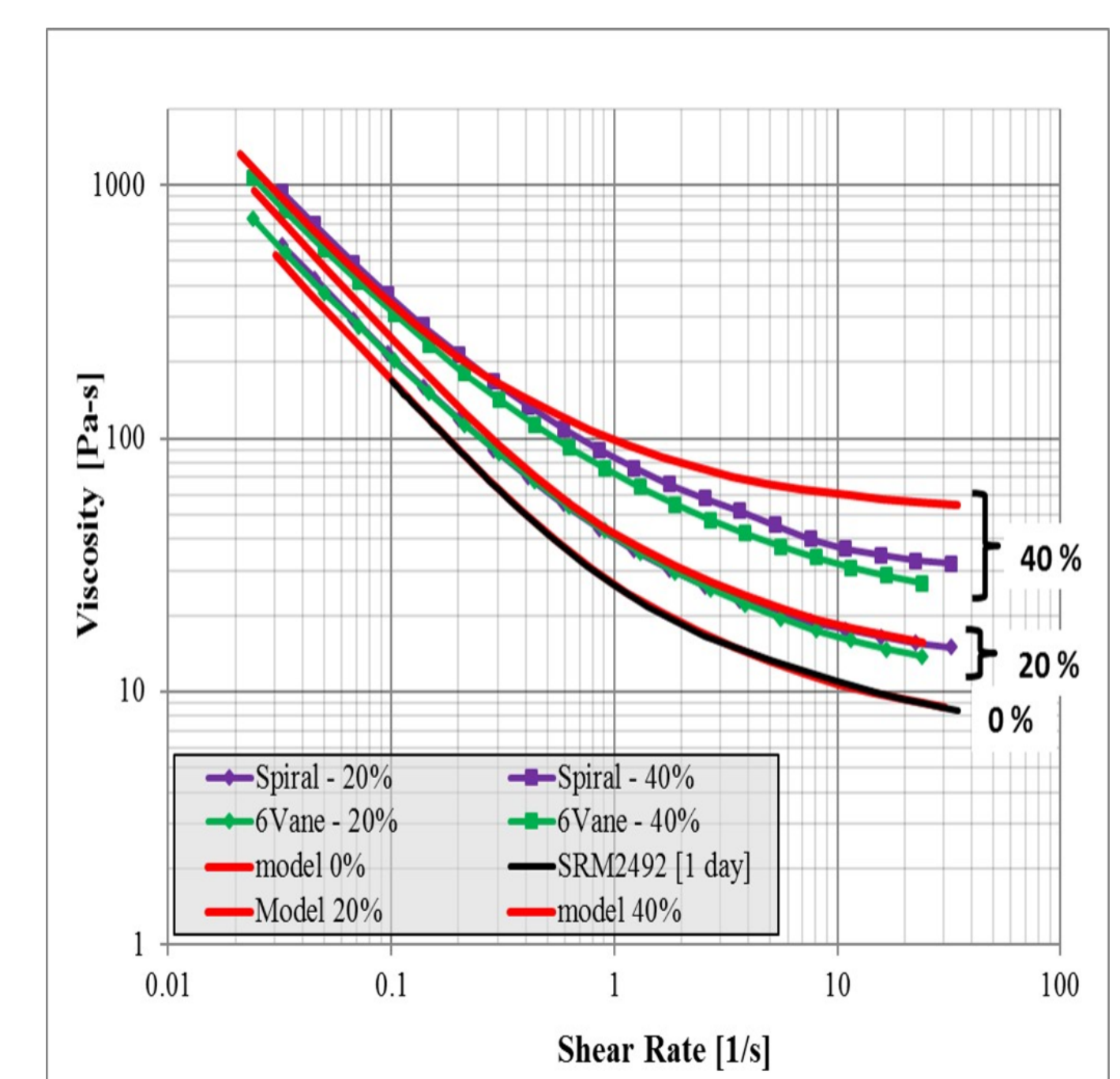
The *Immersive Visualization and Analysis Laboratory* was used throughout this project.



Rheometer w/mortar

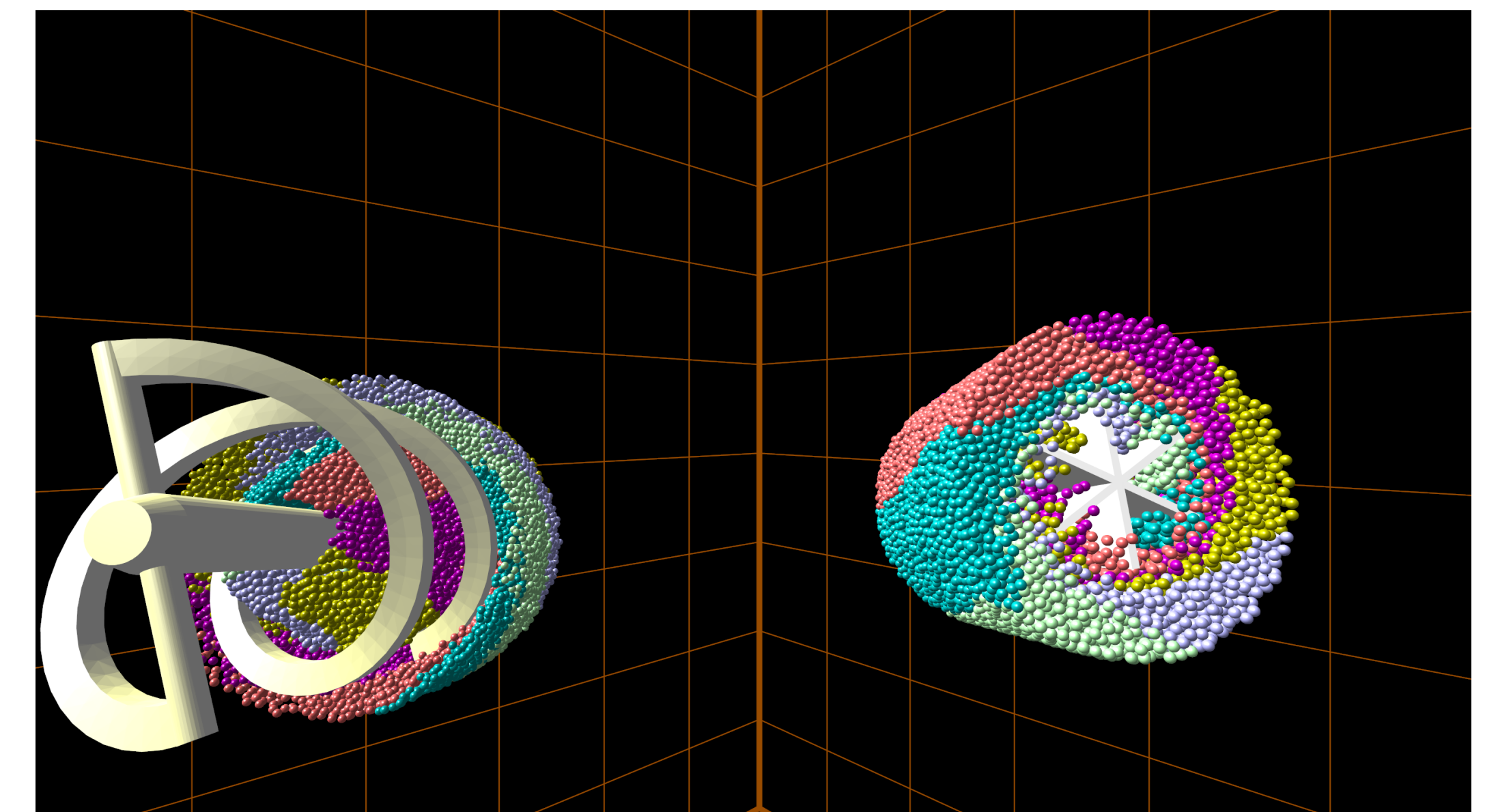
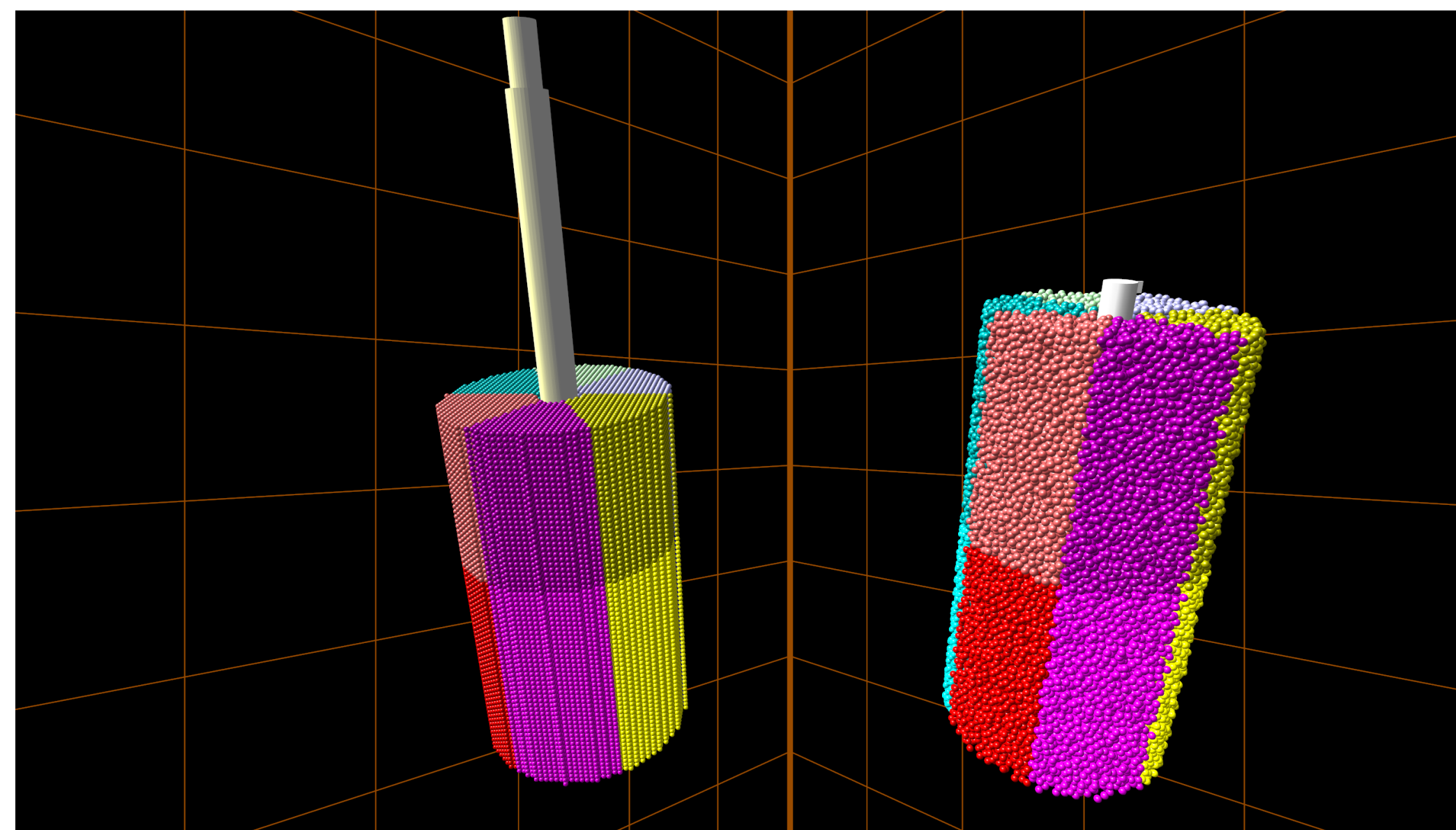
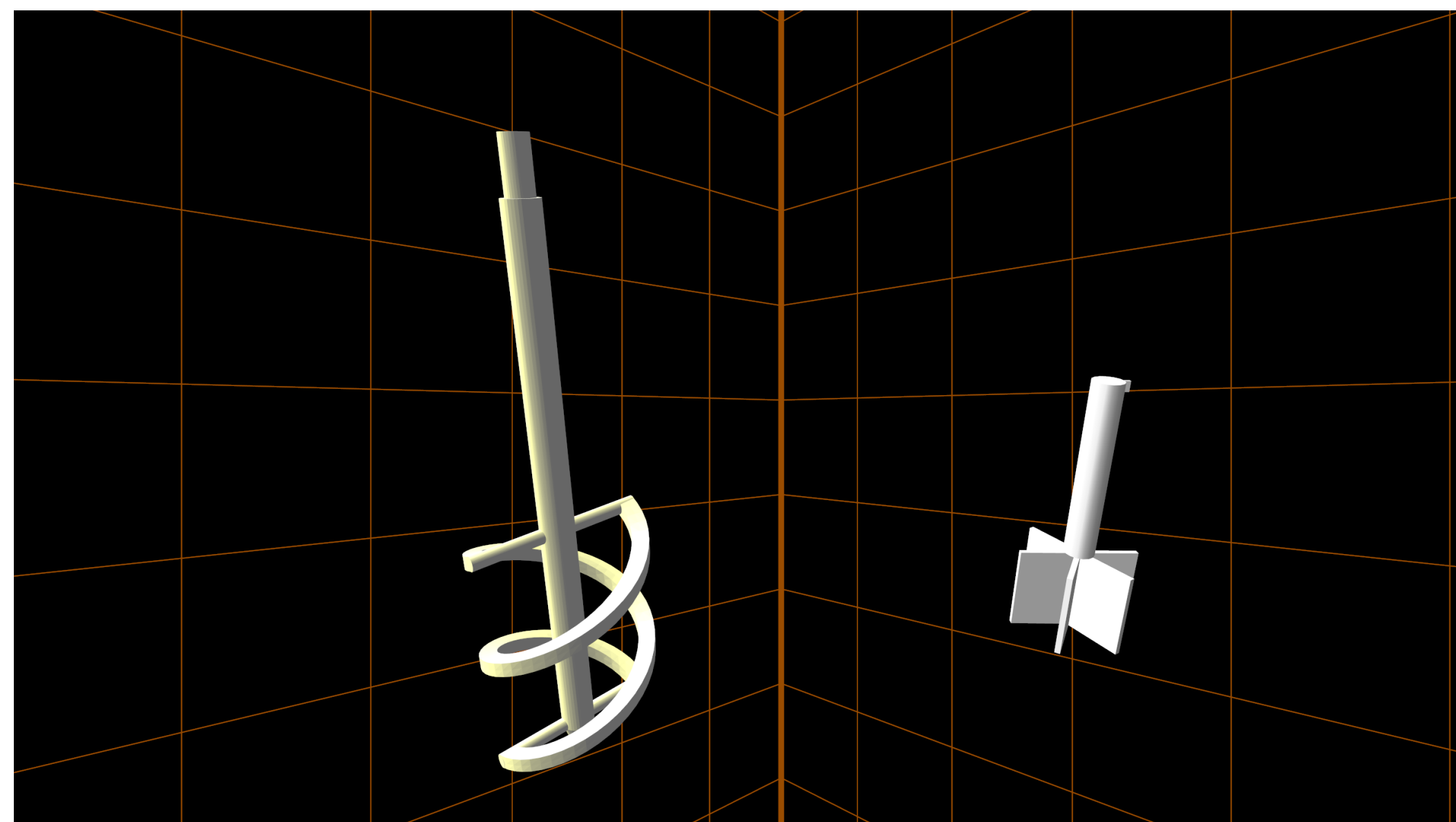


The computer model simulates a suspension in an infinite system, using Lees-Edwards boundary conditions - illustrated above.



Unexpected results

Experiment (shown on left for the double-helix spindle) gave unexpected results (on right) for both 6-vane and double-helix rheometer spindles. Measured viscosity became too low as the shear rate increased.



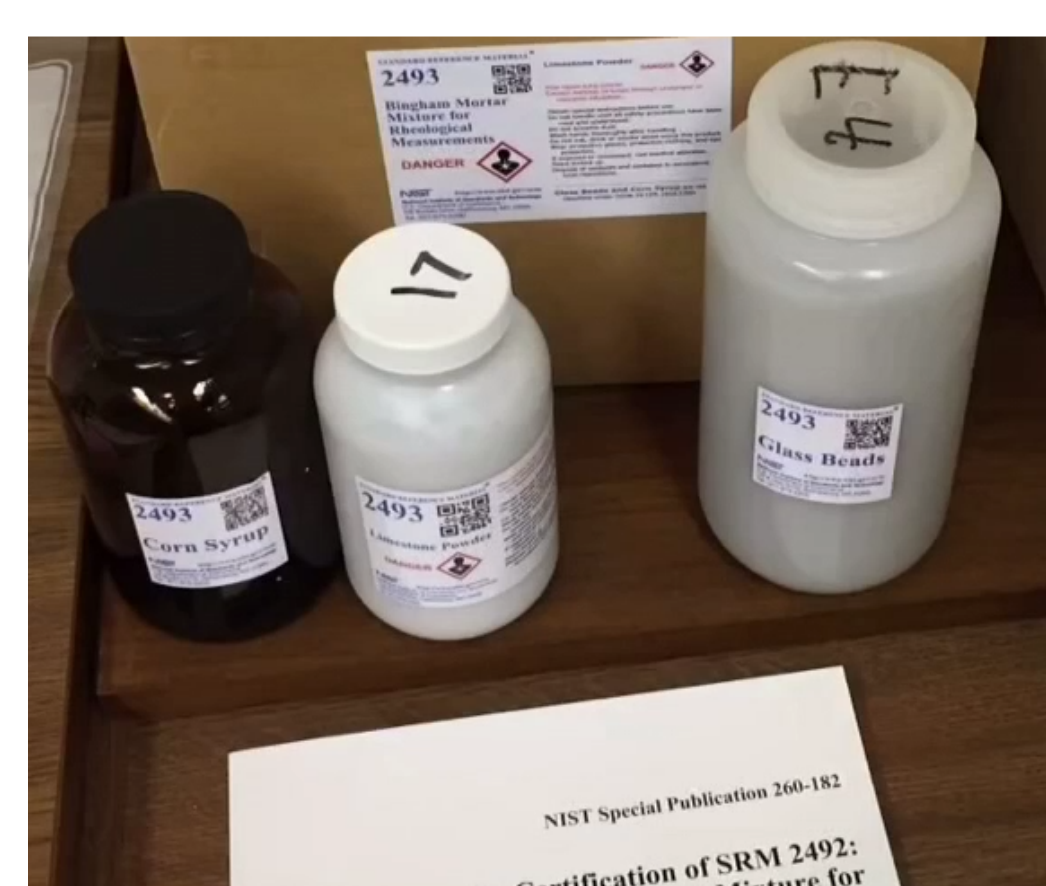
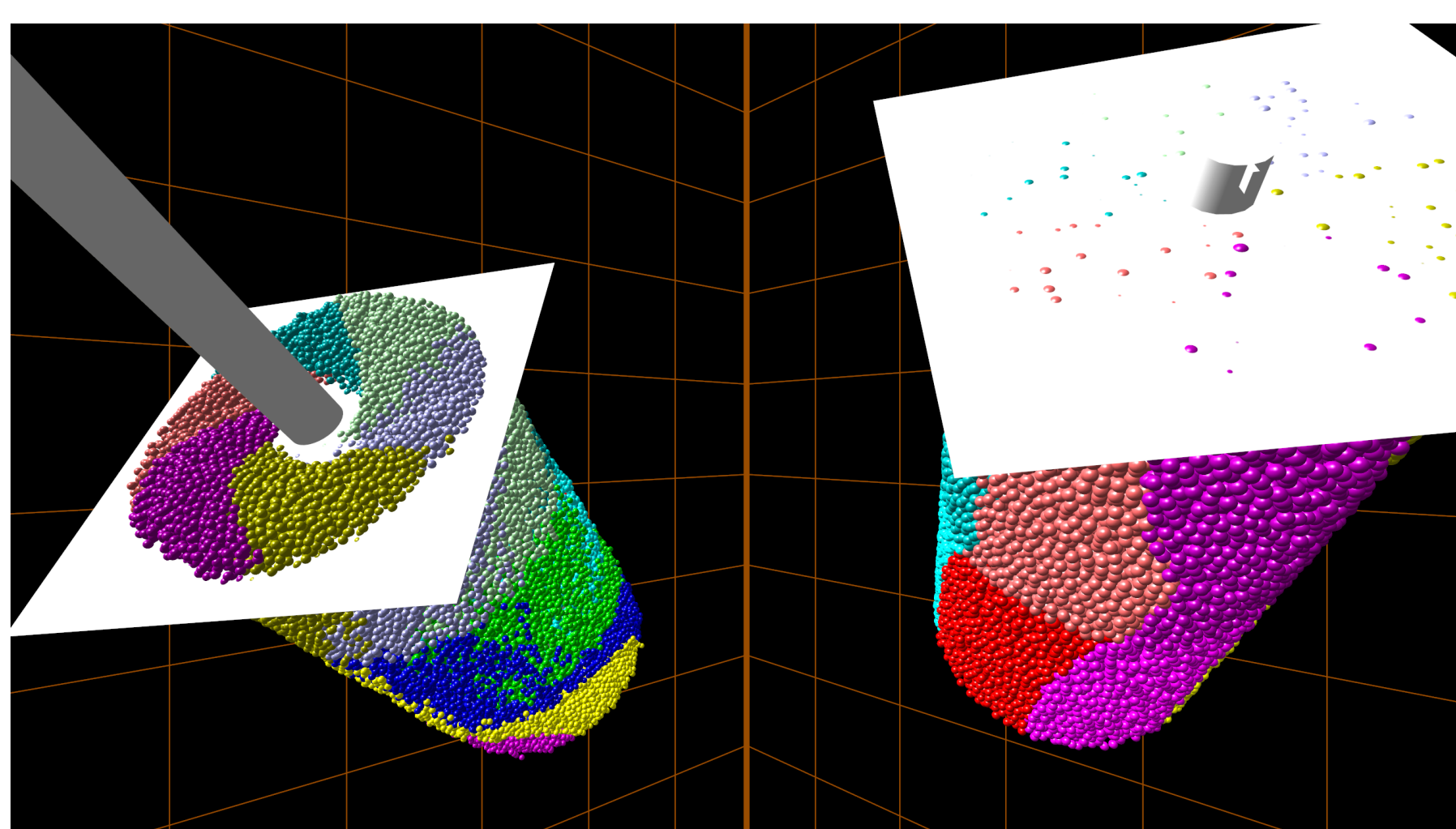
Simulation and immersive visualization was the key to discovering the source of the discrepancy between the experimental results and the expected results.

NIST Special Publication 260-187

Certification of SRM 2493: Standard Reference Mortar for Rheological Measurements

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Publication is available free of charge from:
<https://doi.org/10.6028/NIST.SP.260-187>



PI: Chiara (Clarissa) Ferraris

The NIST Standard Reference Mortar has been certified and released for purchase. This is the first SRM developed with the aid of supercomputing and ***certified based on computed values*** instead of physical measurement.