A collaboration between NYU’s MRSEC and high-tech start-up, Spheryx, Inc., demonstrates how holographic video microscopy can be used to detect, count, and characterize individual micrometer-scale protein aggregates as they flow down a microfluidic channel in their native buffer.

Holographic characterization directly measures the radius and refractive index of sub-visible protein aggregates and offers insights into their morphologies.

The measurement is fast enough to build up population averages for time-resolved studies and lends itself to tracking trends in protein aggregation as a function of environmental factors.

Information on individual particle's shapes and refractive indexes can be used to differentiate protein aggregates from common contaminants such as silicone oil droplets and rubber fragments. No other in situ measurement technique can provide this information.

Meeting the critical unmet need of the biopharmaceutical industry to characterize protein aggregates provides the basis for a spin-off Phase I SBIR grant from the NIH, which enhances the NYU-Spheryx collaboration.