

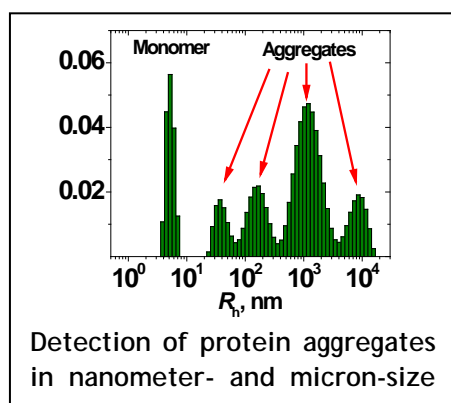


Light Scattering Center (LSC) at the University of Maryland is a shared facility for nanoparticle characterization and research known for its pioneering contributions to dynamic light scattering (DLS) studies and development of innovative light scattering techniques along with powerful theoretical modeling and data processing capabilities.

Equipment: LSC has three state-of-the-art photon-correlation spectrometers to study nano- and micron-sized particulates in solution under controlled temperature. Our instruments also employ an innovative setup for backscattering experiments for analysis of totally nontransparent undiluted samples. LSC is now developing the flow cell to study DLS under flow conditions as well as the software for scattering data analysis in moving liquids.



Backscattering DLS instrument for analysis of nontransparent samples



Applications: DLS is a powerful tool to detect and study nanoparticles, macro and bio molecules, and critical fluctuations. LSC already demonstrated its applicability to detect protein aggregates in therapeutically relevant biologics generated through different stresses. Backscattering DLS setup allows to reliably obtain particle size distributions in undiluted totally opaque samples which otherwise are impossible to study by any light scattering technique. The flow setup which is under development, will provide a means to study protein aggregation in a flow with the future applications as an analytical tool for continuous biomanufacturing.

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References:

- (1) Taraban, M. B.; DePaz, R. A.; Lobo, B.; Yu, Y. B. Water proton NMR: A tool for protein aggregation characterization, *Anal. Chem.* 2017, *89*, 5494-5502
- (2) Taraban, M. B.; Truong, H. C.; Feng, Y.; Jouravleva, E. V.; Anisimov, M. A.; Yu, Y. B. Water proton NMR for in situ detection of insulin aggregates. *J. Pharm. Sci.* 2015, *104*, 4132-4141
- (3) Yudin, I.K.; Anisimov, M.A. Dynamic light scattering monitoring of asphaltene aggregation in crude oils and hydrocarbon solutions. In: *Asphaltenes, heavy oils, and petroleomics*. Mullins, O.C.; Sheu, E.Y.; Hammani, A.; Marshall, A.G. (Eds.), Springer: New York, 2007. pp. 439-468