The Effect of Dimethyl Sulfoxide on Macromolecular Structures

Jennifer A. Slaton[1], Merrell A. Johnson[1], Elliot D. Rosen[2], and Horia I. Petrache[1]
[1]Department of Physics, Indiana University Purdue University Indianapolis; [2]Department of Medical and Molecular Genetics, Indiana University School of Medicine

Hemorrhagic and thrombotic disorders are a consequence of the body's inability to form effective blood clots. A major component of the hemostatic clot is a polymerized fibrin network. The network is formed by polymerization of fibrin which is generated by the enzymatic processing of the precursor fibrinogen in blood by the coagulation enzyme thrombin. In our study we investigated how dimethyl sulfoxide (DMSO) effects the formation of the fibrin mesh. These networks were grown over micron-sized pores in polymer membranes with varying concentrations of DMSO. The samples were characterized optically using confocal and differential interference contrast microscopies. Image analysis was performed to determine the structural changes in the fibrin organization.

Mentor: Horia I. Petrache, Department of Physics, Indiana University Purdue University Indianapolis, Indianapolis, IN