

1163-92-1691

Anna Nelson*. *Understanding the effect of fibrinogen interactions on fibrin gel time and structure.*

An important component of a blood clotting process is fibrin polymerization, which begins with the conversion of soluble blood protein fibrinogen to fibrin. Fibrin monomers then polymerize to form a space-filling gel that provides a scaffold for the growing blood clot. Although fibrinogen cannot react with itself, it can also form oligomers with fibrin called soluble fibrin complexes (SFCs). SFCs are known biomarkers for adverse thrombotic disorders and have been thought to impact both clot time and clot structure, making it an important complex to study. Motivated by these fibrin-fibrinogen interactions, a two-monomer polymerization system is proposed with monomers that participate in different reaction types. The presented kinetic model is studied up until gelation, which is defined as the emergence of an oligomer of infinite size in finite time. Using physiological initial conditions, known and estimated reaction rates, we investigate physical concentrations at gel time to determine the impact of fibrin-fibrinogen binding on gel structure (such as concentration of branch points) and small oligomer concentration at gel time. (Received October 13, 2020)