

Abstract Submitted  
for the DFD11 Meeting of  
The American Physical Society

**Numerical study on the initial stage of thrombus growth** SHU TAKAGI, SATOSHI II, The University of Tokyo, SELJI SHIOZAKI, RIKEN, KAZUYASU SUGIYAMA, YOICHIRO MATSUMOTO, The University of Tokyo — Thrombosis is regarded as one of the most important diseases, which cause the myocardial and cerebral infarctions. It is affected from molecular scale protein-protein interaction to continuum scale in blood flow. Initially, platelets start aggregate at the injured vessel wall, where von Willebrand Factor (vWF) is attached. The Glycoprotein, GPIIb-IIIa on platelet membrane starts showing ligand-receptor interaction with this vWF and platelets start aggregating around this spot. In the present study, the molecular scale interaction between vWF and GPIIb-IIIa is taken into account through the kinetic Monte Carlo simulations. Then, the interacting force between platelets and vascular endothelium obtained from kinetic Monte Carlo simulation is coupled with the continuum scale simulation. The results illustrate that platelets are much easier to aggregate on the wall in the presence of red blood cells and the effect of molecular interaction force are quantitatively discussed on the aggregation of platelets.

Shu Takagi  
The University of Tokyo

Date submitted: 05 Aug 2011

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