

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**Molecular**

**Dynamics**

**Simulation of Frictional Melting** SHIGENOBU HIROSE, The Earth Simulator Center, JAMSTEC — Frictional melting produces lubricant at the sliding plane and changes the physics of dynamical sliding, which may play a key role on coseismic slipping. In this paper, molecular dynamics simulation is used to study the basic physics of frictional melting. Here, friction between a Lennard-Jones material and a rigid material is considered for simplicity. When the sliding velocity is low enough, there is no melting and the friction coefficient almost does not depend on the sliding velocity. On the other hand, when the sliding velocity is so high that frictional melting occurs, the friction coefficient decreases due to the melting lubricant. A preliminary result shows that the friction coefficient is roughly power-law of the sliding velocity. A discussion will also be given on the thermodynamic balance between the frictional heating, cooling by latent heat, and conduction cooling.

Shigenobu Hirose  
The Earth Simulator Center, JAMSTEC

Date submitted: 20 Nov 2006

Electronic form version 1.4