Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

Microscopic Measurements of Axial Accumulation of Red Blood Cells in Capillary Flows Effects of Deformability[1] TAKAHIRO SASAKI, Graduate school of Kansai University, JUNJI SEKI, TOMOAKI ITANO, MASAKO SUGIHARA-SEKI, Kansai University — In the microcirculation, red blood cells (RBCs) are known to accumulate in the region near the central axis of microvessels, which is called the "axial accumulation". Although this behavior of RBCs is considered to originate from high deformability of RBCs, there have been few experimental studies on the mechanism. In order to elucidate the effect of RBC deformability on the axial accumulation, we measured the cross-sectional distributions of RBCs flowing through capillary tubes with a high spatial resolution by a newly devised observation system for intact and softened RBCs as well as hardened RBCs to various degrees. It was found that the intact and softened RBCs are concentrated in the small area centered on the tube axis, whereas the hardened RBCs are dispersed widely over the tube cross section dependent on the degree of hardness. These results demonstrate clearly the essential role of the deformability of RBCs in the "axial accumulation" of RBCs.

[1]JSPS KAKENHI Grant Number 17H03176, Kansai University ORDIST group funds

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Date submitted: 25 Sep 2017 Electronic form version 1.4