PLEASE NOTE CHANGE IN DAY AND TIME FOR THIS SEMINAR ONLY

CENTER FOR FLUID MECHANICS
AND
THE FLUIDS, THERMAL AND CHEMICAL PROCESSES GROUP
OF
THE DIVISION OF ENGINEERING
SEMINAR SERIES

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Deformability of Red Blood Cells Flowing in Microcapillaries in Vitro

The deformability of red blood cells flowing in microvessels is essential to maintain optimal blood circulation and to allow gas transfer between blood and tissues. From a pathological viewpoint, reduced RBC deformability is involved in a number of blood diseases, such as Thalassemia, Iron Deficiency, Congenital Spherocytic and Non Spherocytic Anemias, Idiopathic Myelofibrosis. In spite of such physiopathological relevance, measurements of RBC deformability are usually of difficult clinical application, being still carried out by approximate methods and under conditions quite different from those occurring in vivo. In this work, we investigate RBC deformability in microcapillaries having diameter comparable to the average cell size. RBC velocity and shape is determined by analyzing high magnification images taken through a video microscopy workstation. It is found that RBCs from healthy donors exhibit the classical parachute shape observed in vivo. Furthermore, all the data of healthy RBC velocity vs liquid head are well represented by the same linear regression, independently on the donor. Preliminary results on beta- and alfa-thalassemia RBCs show, on the average, a reduced velocity compared to healthy samples.

Monday, November 27, 2006
Barus & Holley, Room 190
2:00pm