

**TWO-DIMENSIONAL SIMULATION TO INVESTIGATE THE INTERACTION
OF FLUID - STRUCTURE INSIDE A MICROCHANNEL
WITH ELASTIC AND RIGID BOUNDARY**

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ABSTRACT

In this paper, shape change of the elastic and rigid boundary in a micro-channel is simulated. The rings are considered as elastic boundaries immersed in the fluid flow. In this study, we use the Immersed Interface Method to simulate the flow around rigid objects and movement of the flexible objects. In this method, there is no compulsion to match the object mesh and the flow mesh. The results were found to be in good agreement with available data. First, the simultaneous motion of multiple membranes in a micro-channel and their interaction with each other and with flow are evaluated. In addition, simultaneous presence of multiple membranes would result in a reduction in the flow velocity. Finally, the effects of changes in the elastics and bending moduli on the deformation of cell are considered.

KEYWORDS: *Elastic Ring, Immersed Interface Method, Interaction & Deformation*

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