

عنوان مقاله:

Numerical Solution of Two-Phase Flow of Blood and Water in Three-Way Approach to Impact Water Inlet Angle

محل انتشار:

دومین کنفرانس بین المللی مهندسی مکانیک و هوافضا (سال: 1396)

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خلاصه مقاله:

Due to the use of non-Newtonian fluids in many different industries such as food industry, polymer industry, cosmetics, and health and medicine, paint and fuel industry, check the behavior of non-Newtonian fluid is a sense of obligation. Due to the variety of methods available for simulate this fluid in solving industrial and medical problems, part of the study day dedicated to this topic. Besides that, there is the importance and application of two-phase flows in various industries. Blood is also a non-Newtonian fluid that the investigation of its behavior, can greatly help in medicine. The objectives of this research, the development of the field of Non-Newtonian fluids in the country and also the development of application of software and numerical methods in engineering science. In this study, the numerical solution of twophase flow of blood and water in a three-way with impact of water inlet angle, was studied. For non-Newtonian fluid properties of viscosity, The Carreau–Yasuda model is used. Under similar operating conditions, flow dynamics and mixing were compared between the water entry angles. The flow of blood and water, is considered laminar. The pressure drop and velocity of mixing blood and water is studied. For solve, mixing method with ANSYS FLUENT is used. After the study concluded that by increasing the water flow, pressure drop and maximum velocity increased and also by increasing angle of water inlet, the pressure drop and maximum velocity is reduced. By increasing water entry angle

کلمات کلیدی:

Non-Newtonian fluid, Two-Phase flow, Numerical Solution, blood, Carreau–Yasuda model

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