

## Effects of Magnetic Field Strength on Fluid Flow Behavior in a Constricted Channel

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**Abstract :** One of possible ways to retard movement of fluid is through applying an external magnetic field. In this regard, this study is focused on the effect of a uniform transverse magnetic field on fluid flow behavior inside a channel with a local symmetric constriction. Also, Ellis Non-Newtonian model is implemented to address the effects of shear-dependent viscosity. According to the results, the flow separation downstream of the constriction can be controlled by applying an external magnetic field and/or manipulating the shear-thinning degree of fluid. It is also demonstrated that pressure drop increases by an increase in the strength of the magnetic field.

**Keywords :** magnetic field, non-Newtonian, separation, shear thinning

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