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Magnetogasdynamic natural convection in a long vertical microchannel

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## Highlights

- **Original study**

There were no studies on microscale magnetogasdynamic natural convection.

- **New finding – Velocity**

Results show that a greater magnetic force would result in a flatter velocity profile.

- **New finding – Thermal-flow characteristics**

Results reveal that magnetic force results in decreases in thermal-flow characteristics.

- **New finding – Enhanced magnetic effects**

These effects could be further enhanced with higher by increasing gas rarefaction.

- **Potential benefits of the present study**

This study could benefit the designs of magnetically controllable microfluidic devices.

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