



Fig. 3. Dimensionless temperature distribution as function of the dimensionless axial coordinate in combined electroosmotic and magnetohydrodynamic flows with different values of the Hartman number.

REFERENCES

- [1] S. Hardt and F. Schönfeld, "Microfluidics: fundamentals and engineering concepts," in *Microfluidic technologies for miniaturized analysis systems*, S. Hardt and F. Schönfeld, Eds. Springer, 2007, ch. 1, pp. 1–58.
- [2] H. C. Chang and L. Y. Yeo, *Electrokinetically driven microfluidics and nanofluidics*. Cambridge University Press, 2010.
- [3] D. J. Laser and J. G. Santiago, "A review of micropumps," *J. Micromech. Microeng.*, vol. 14, pp. R35–R64, 2004.
- [4] J. Khandurina, T. E. McKnight, S. C. Jacobson, L. C. Waters, R. S. Foote, and J. M. Ramsey, "Integrated system for rapid PCR-based DNA analysis in microfluidic devices," *Anal. Chem.*, vol. 72, pp. 2995–3000, 2000.
- [5] C. Zhang, D. Xing, and Y. Li, "Micropumps, microvalves, and micromixers within PCR microfluidic chips: advances and trends," *Biotech. Adv.*, vol. 25, pp. 483–514, 2007.
- [6] N. C. Cady, S. Stelick, M. V. Kunnakkam, and C. A. Batt, "Real-time PCR detection of listeria monocytogenes using an integrated microfluidics platform," *Sens. Actuators B: Chem.*, vol. 107, pp. 332–341, 2005.
- [7] A. Ramos, "Electrohydrodynamic and magnetohydrodynamic micropumps," in *Microfluidic technologies for miniaturized analysis systems*, S. Hardt and F. Schönfeld, Eds. Springer, 2007, ch. 2, pp. 59–116.
- [8] J. H. Masliyah and S. Bhattacharjee, *Electrokinetic and colloid transport phenomena*. Wiley Interscience, 2006.
- [9] A. Afonso, A. Alves, and F. Pinho, "Analytical solution of mixed electro-osmotic/pressure driven flows of viscoelastic fluids in microchannels," *J. of Non-Newton. Fluid Mech.*, vol. 159, pp. 50–63, 2009.
- [10] H. M. Park and W. M. Lee, "Helmholtzsmoluchowski velocity for viscoelastic electroosmotic flows," *J. Colloid Interface Sci.*, vol. 317, pp. 631–636, 2008.
- [11] S. Dhinakaran, A. M. Afonso, M. A. Alves, and F. T. Pinho, "Steady viscoelastic fluid flow between parallel plates under electro-osmotic forces: Phan-thientanner model," *J. Colloid Interface Sci.*, vol. 344, pp. 513–520, 2010.
- [12] C. Zhao, E. Zholkovskij, J. H. Masliyah, and C. Yang, "Analysis of electroosmotic flow of power-law fluids in a slit microchannel," *J. Colloid Interface Sci.*, vol. 326, pp. 503–510, 2008.
- [13] K. R. Cramer and S. Pai, *Magnetofluid dynamics for engineers and applied physicists*. Wiley Interscience, 2006.
- [14] M. Rivero and S. Cuevas, "Analysis of the slip condition in magnetohydrodynamic (MHD) micropumps," *Sens. Actuators B: Chem.*, vol. 166–167, pp. 884–892, 2012.
- [15] J. Jang and S. S. Lee, "Theoretical and experimental study of MHD (magnetohydrodynamic) micropump," *Sens. Actuators A: Phys.*, vol. 80, pp. 84–89, 2000.
- [16] H. H. Bau, J. Zhu, S. Qian, and Y. Xiang, "A magneto-hydrodynamically controlled fluidic network," *Sens. Actuators B: Chem.*, vol. 88, pp. 205–216, 2003.
- [17] S. Qian and H. H. Bau, "Magneto-hydrodynamics based microfluidics," *Mech. Res. Commun.*, vol. 36, pp. 10–21, 2009.
- [18] S. Chakraborty and D. Paul, "Microchannel flow control through a combined electromagnetohydrodynamic transport," *J. Phys. D: Appl. Phys.*, vol. 39, pp. 5364–5371, 2006.
- [19] J. P. Escandón, O. E. Bautista, F. Santiago, and F. Méndez, "Asymptotic analysis of non-newtonian fluid flow in a microchannel under a combination of EO and MHD micropumps," in *Proc. 9th International Conference on Diffusion in Solids and Liquids:DSL2013*, Madrid, Spain, 2013.