

## Accepted Manuscript

Electroosmotic flow of a non-Newtonian fluid in a microchannel with heterogeneous surface potential

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PII: S0377-0257(17)30245-8  
DOI: [10.1016/j.jnnfm.2018.05.005](https://doi.org/10.1016/j.jnnfm.2018.05.005)  
Reference: JNNFM 4016



To appear in: *Journal of Non-Newtonian Fluid Mechanics*

Received date: 25 May 2017  
Revised date: 23 May 2018  
Accepted date: 25 May 2018

Please cite this article as: Naren Bag, S. Bhattacharyya, Electroosmotic flow of a non-Newtonian fluid in a microchannel with heterogeneous surface potential, *Journal of Non-Newtonian Fluid Mechanics* (2018), doi: [10.1016/j.jnnfm.2018.05.005](https://doi.org/10.1016/j.jnnfm.2018.05.005)

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**Highlights**

- Nernst-Planck model for EOF of a non-Newtonian fluid is considered
- Effect of surface potential heterogeneity is analyzed
- Existing Debye-Huckel solution underestimates the present model for overlapping EDLs
- Nonlinearity effects are pronounced for a shear-thinning fluid
- Vortex size expands with the increase of fluid behavioral index

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