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Bimetallic microswimmers speed up in confining channels HEPENG ZHANG, CHANG LIU, Shanghai Jiao Tong University, CHAO ZHOU, WEI WANG, Harbin Institute of Technology — Synthetic microswimmers are envisioned to be useful in numerous applications, many of which occur in tightly confined spaces. It is therefore important to understand how confinement influences swimmer dynamics. Here we study the motility of bimetallic microswimmers in linear and curved channels. Our experiments show swimmer velocities increase, up to 5 times, with the degree of confinement, and the relative velocity increase depends weakly on the fuel concentration and ionic strength in solution. Experimental results are reproduced in a numerical model which attributes the swimmer velocity increase to electrostatic and electro-hydrodynamic boundary effects. Our work not only helps to elucidate the confinement effect of phoretic swimmers, but also suggests that spatial confinement may be used as an effective control method for them.

Hepeng Zhang
Shanghai Jiao Tong University

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