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**Motion of microbeads propelled by bacterial chemotaxis in a microfluidic platform**<sup>1</sup> DONG WOOK KIM, YOUNG WON KIM, JUNG YUL YOO, Department of Mechanical and Aerospace Engineering, Seoul National University — Micro actuators propelled by bacteria are of great interest in recent years, because bacterial chemotaxis has well-presented one of the very promising solutions to the utilization of the motion of flagellated bacteria. In this work, the motion of fluorescent microbeads driven by bacterial chemotaxis has been analyzed by micro-particle tracking velocimetry ( $\mu$ -PTV). Flagellated bacteria, *Serratia Marcescens*, are attached to the surface of the polystyrene (PS) microbeads spontaneously in an aqueous culture solution. Then, these particles are injected in the test medium where the linear concentration gradient of L-aspartate is maintained, which is generated by convective and molecular diffusions in a microfluidic platform. It is observed that the particles slowly move toward the high-concentration zone of L-aspartate. This work shows that migration of microbeads using bacterial chemotaxis can be one of the effective tools for the applications to actuators of micro-bio robots.

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