

Magnetically Actuated Micro-robot: Non-invasive Approach for Precision Medicine

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Abstract

Non-invasive drug delivery and intestinal microbiota monitoring have drawn worldwide attention. Micro-robot especially magnetically actuated type becomes most promising approach owing to its advantage in wireless controllability, miniature size. On-demand fabrication and multifunction integration with multimode motion or multi-signal sensing are still the greatest challenges. In this talk, magnetic driven printing method will be proposed for on-demand precision assembly of magnetic particle to fabricate 1D micro-thread robot, 2D membrane robot and 3D robot with complicate structure. Control principle is explored to realize the multimode motion for 1D, 2D and 3D micro-robot. Moreover, the experiments of *in vivo* drug delivery and wireless microbiota monitoring are conducted to validate its efficiency and usefulness. The recent progresses in micro-robot for precision medicine will also highlighted.

About the speaker:



Chen Huawei is currently a Professor/Deputy Dean of School of Mechanical Engineering and Automation, Beihang University. Dr. Chen's research is focused on the bio-inspired functional surface, micro/nano fabrication, micro/nano fluidics, and its applications in aerospace and precision. He is the Leading Talent of Ten Thousand Plan, Outstanding Young Scientist Foundation of National Nature Science Foundation of China, a JSPE Fellow etc. Dr. Chen has authored more than 100 journal papers in *Nature*, *Nature Materials*, *Advanced Materials*, *Advanced Science*, *Small*, *Angew. Chemie*, *ACS Applied Materials & Interface* etc.