Programmable polymer brings microbots to life

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Video Byte

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Abstract

It might look like a corkscrew on the loose, but programmable microswimmers like this could one day help doctors deliver precision medical treatment. Their bacteria-inspired motion is made possible by magnetic particles embedded throughout their helical body. By applying an external magnetic field, the robots can be made to swim along any path, in two dimensions or three. Their ability to shape-shift on command comes from the programmable nature of polylactic acid, which can be deformed into any arbitrary shape and revert to its original shape by applying heat. That makes each microswimmer capable of delivering cargo or expanding into a stent to provide support. Small, versatile, and easy to fabricate, these microrobots could one day help doctors treat areas that are otherwise inaccessible to modern medicine.