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Intellectual Property Status: Patent Pending

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# Magnetofluidics

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## **Invention Description**

Controlling drop movement on superhydrophobic surfaces is important in a number of technologies. For example, self-cleaning, superhydrophobic surfaces, microfluidics devices, and digital microfluidics can benefit from advances in developing non-wetting drops.

To move water-based droplets, magnetic fields have been applied across a surface, but droplet movement is typically retarded by the low contact angle between the droplet and the surface.

Researchers at Arizona State University have developed a magneto-fluidic device composed of a superhydrophobic surface and a fluid sample with magnetic particles coated with a passivating layer. Not only have the researchers shown controlled drop movement in a magnetic field, but also corrosion resistance against oxidizing agents.

The ability to control discrete fluid droplets at fixed locations offers new opportunities for the micro-scale control of protein chemistry, detection, and measurement.

# **Potential Applications**

- Micro-scale fluidics
- Digital microfluidics
- Self-cleaning superhydrophobic surfaces

## **Benefits and Advantages**

- Controlled movement of droplets in magnetic field
- Corrosion resistant magnetic particles
- Able to fix droplet position for measurement and detection