

## Microneedle Coating (#3526)

*A method for making microneedles, coating them, and using them for drug transport*

Researchers at Georgia Tech have developed a technology that provides a method for making microneedles, coating them, and using them for drug transport. Advantages of this technology include coating uniformity, spatial control on coating length, and prevention of microneedle base contamination. The coating can also be used for low concentration drugs, molten drugs, and can even be used without the incorporation of surfactants. Coated microneedle devices and methods of making such devices are provided. In one aspect, a method for coating includes providing a microstructure having at least one surface in need of coating; and applying a coating liquid, which comprises at least one drug, to the at least one surface of the microstructure, wherein the surface energy of the coating liquid is less than the surface energy of the surface of the microstructure.

### Benefits/Advantages

- Alternative method for hypodermic needles
- Coating uniformity
- Spatial control on coating length
- Prevention of microneedle base contamination
- Used without the incorporation of surfactants

### Potential Commercial Applications

- Low concentration drugs
- Molten drugs

### Background/Context for This Invention

Biopharmaceuticals, such as peptides, proteins, and future uses of DNA and RNA, represent a rapidly evolving segment of pharmaceutical therapies. These drugs are delivered almost exclusively by the parenteral route, as the oral route is generally unavailable due to poor absorption, drug degradation, and low bioavailability. However, conventional parenteral administration with hypodermic needles undesirably requires expertise for delivery, can lead to accidental needle sticks, and causes pain, which results in reduced patient compliance. Given these problems, efforts have been made to develop alternate drug delivery routes that would ideally replace hypodermic needles. It would be desirable to provide drug delivery methods and devices that eliminate the limitations and disadvantages associated with the use of conventional hypodermic needles.

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## **More Information**

U.S. Patent Issued - [9364426](#)

## **Publications**

**For more information about this technology, please visit:**

<https://licensing.research.gatech.edu/technology/microneedle-coating>

Images:

The automated sequential delivery of multiple fluids. A varying number of delay gates imprinted in the branches are shown in the figure.

COVID-19 and flu saliva test on paper: (A) The automatic sequential delivery of multiple reagents required for virus test; (B) Water pouring into the device triggers the virus assay, allowing the presence of SARS-CoV-2 and influenza A & B viruses to be visually identified by the color changes in the corresponding detection spot

