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Heterogeneously Integrated Si Nanoneedles with Flexible Bio-Substrates for Efficient Bio-integrations

Flexible, biodegradable silicon nanoneedles offer a minimally invasive platform for cell-level imaging, probing, and molecular delivery in biological systems.

Researchers at Purdue University have developed Si nanoneedles fabricated with various kinds of mechanically flexible bio-related substrates, providing flexibility, stretchability, and biodegradability. The transparent, ultrathin nanoneedles serve as an ideal platform for minimally invasive penetration into biological cells. This technology would help researchers or instructors who want to image, probe, and/or deliver molecules into/from biological systems for measuring important electrical and/or mechanical properties.

Advantages:

-Flexible/stretchable

-Minimally invasive

-Biodegradable

Potential Applications:

-Imaging

-Probing

-Molecule transfer

TRL: 3

Intellectual Property:

Provisional-Patent, 2018-09-27, United States | PCT-Patent, 2019-09-27, WO | NATL-Patent, 2021-03-18, United States

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