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Graphene Prevents Neurostimulation-induced Platinum Corrosion

Microelectrodes that reduce platinum corrosion up to 97% while maintaining charge transfer.

Researchers at Purdue University have developed neurostimulation microelectrodes that solve the current concerns of safety and reliability, while still maintaining high performance. Platinum (Pt) is one of the most commonly used materials for neurostimulation devices due to its excellent biocompatibility and good charge transfer characteristics. Although Pt is regarded as safe, it commonly goes through irreversible electrochemical corrosion during neurostimulation which leaves cytotoxic byproducts. To combat these issues, Purdue Researchers micro-fabricated graphene-coated Pt microelectrodes with circular and fractal designs to show that graphene can significantly suppress Pt corrosion while maintaining excellent performance. In fact, over a 10 hour testing time, the graphene layer reduced Pt corrosion by 97 percent for fractal microelectrodes and 88 percent for circular microelectrodes all while retaining superior charge transfer characteristics.

Advantages:

-Decreased Corrosion

-Safe

-Reliable

Potential Applications:

-Neurostimulation devices

TRL: 4

Intellectual Property:

Technology ID

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Category

Materials Science & Nanotechnology/Biomedical & Bioinspired Materials

Digital Health & Medtech/AI in Medical Imaging

Digital Health & Medtech/Implantable Medical Devices

Further information

Patrick Finnerty
pwfinnerty@prf.org

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