

New Materials and Devices for Bioelectronic Medicine

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Bioelectronic medicine provides a new means of addressing disease via the electrical stimulation of tissues: Deep brain stimulation, for example, has shown exceptional promise in the treatment of neurological and neuropsychiatric disorders, while stimulation of peripheral nerves is being explored to treat autoimmune disorders. To bring these technologies to patients at scale, however, significant challenges remain to be addressed. Key among these is our ability to establish stable and efficient interfaces between electronics and the human body. I will show examples of how this can be achieved using new organic electronic materials and devices engineered to communicate with the body and evolve with it. I will discuss the fundamental materials properties that play a critical role in this endeavor.