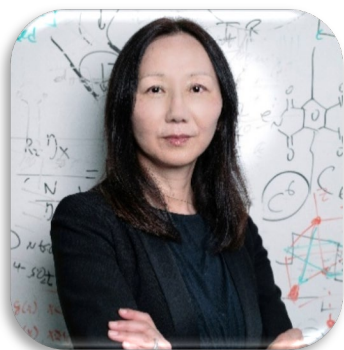




Zhenan Bao

Stanford University

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Bao is K.K. Lee Professor of Chemical Engineering, and by courtesy, Professor of Chemistry, Professor of Materials Science and Engineering, and Professor of Bioengineering at Stanford University. Bao directs the Stanford Wearable Electronics Initiative (eWEAR). She served as the Department Chair of Chemical Engineering from 2018-2022 and 2025. Prior to joining Stanford in 2004, she was a Distinguished Member of Technical Staff in Bell Labs, Lucent Technologies from 1995-2004. She received her Ph.D. in Chemistry from the University of Chicago in 1995. Bao is a member of the National Academy of

Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences and the National Academy of Inventors. She is a foreign member of the Chinese Academy of Science. Bao is known for her work on artificial electronic skin, which is enabling a new-generation of skin-like electronics for regaining sense of touch for neuro prosthetics, human-friendly robots, human-machine interface and seamless health monitoring devices. Bao has been named by Nature Magazine as a “Master of Materials”. She is a recipient of the ACS Kavli Lecture Award for Innovations in Chemistry 2024, VinFuture Prize Female Innovator 2022, ACS Chemistry of Materials Award 2022, Gibbs Medal 2020, Wilhelm Exner Medal 2018, L'Oréal-UNESCO For Women in Science Award 2017. Bao co-founded C3 Nano (acquired by Du Pont) and PyrAmes, which produced materials used in commercial smartphones and FDA-approved blood pressure monitors. Research inventions from her group have also been licensed as foundational technologies for multiple start-ups founded by her students.

Abstract: “Skin-Inspired Polymer Electronics”

Skin is the body's largest organ. It is responsible for the transduction of a vast amount of information. This conformable, stretchable, self-healable and biodegradable material simultaneously collects signals from external stimuli that translate into information such as pressure, pain, and temperature. The development of electronic materials inspired by the complexity of this organ is a tremendous, unrealized materials challenge. However, the advent of organic-based electronic materials may offer a potential solution to this longstanding problem. Over the past decade, we have developed materials design concepts to add skin-like functions to organic electronic materials without compromising their electronic properties. They enabled soft integrated circuits and various high-resolution and high sensitivity soft sensors for continuous measurements, including pressure, strain, shear, temperature, electrophysiological and neurotransmitter sensors. The above sensors and integrated circuits are the foundations for soft bioelectronics and are enabling a broad range of new tools for medical devices, robotics and wearable electronics.