Title : ‘’Silk-Templated Nanomaterial Interfaces for Wearables and Bioelectronics: Advances and Prospects(Review)’’

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Abstract

Soft, wearable, stretchable, and flexible devices are intriguing in electronic fields, as they offer light weight, user-friendliness, and high-throughput performance. Electronic devices derived from bioresources spurred augmented benefits typically in terms of sustainability, biocompatibility, biointegration, and their device utilization in copious electronic fields such as biomedical healthcare, sensing, energy, intelligent clothing, and so forth. Significantly, the natural biopolymer silk has extensively been explored to design wearable electronic devices because of its excellent attributes and active functional sites present in their structures. Consequently, silk is being integrated with various carbon-based fillers, metallic interfaces, conducting polymers, etc. This review provides a comprehensive overview of silk integrated nanomaterial structures for wearable and bioelectronics applications. The outstanding structural features of silk materials have been discussed, summarizing their intrinsic properties and performance matrices for integration with various nanomaterials. Several silk/nanomaterial-enabled bioelectronics applications are presented, and in the end, future opportunities are also envisioned. © 2021 American Chemical Society

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