Laser-Induced Advanced Materials for Flexible Electronics

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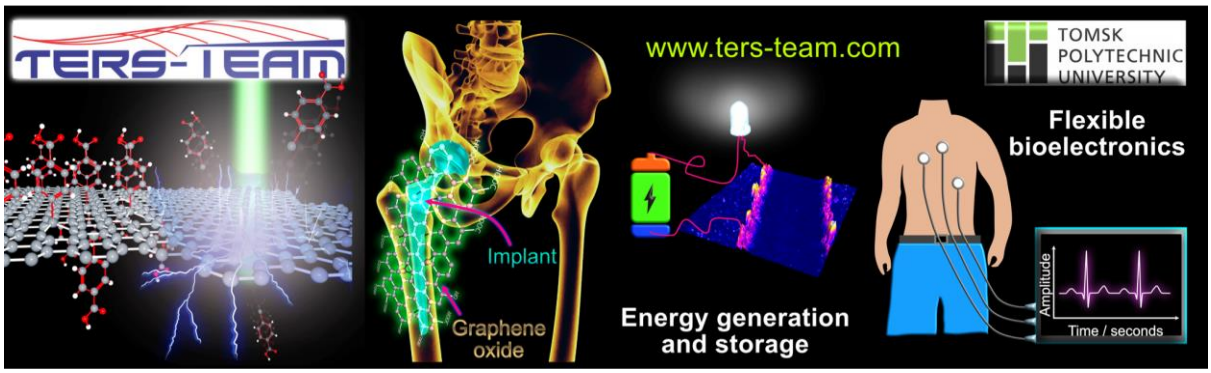
Flexible electronics requires large-scale, affordable, and versatile technological processes that ensure multifunctional materials with stable electrical performance along with flexibility, stability, and even stretchability. Combining polymers and two-dimensional materials offers a new alternative with great perspectives towards this end[1]. However, in many cases the issue of the electronic component adhesion to the substrate has to be resolved. In this talk we present a range of laser-induced composites that exhibit impressive stability against mechanical deformation, and corrosion. Moreover, their electrical resistance is tunable and lies in the range from hundreds Ohm up to thousands kOhm. The composite fabrication method is based on incorporating nanomaterials from graphene-based compounds[2] to metallic nanoparticles[3] into a polymer substrate by laser processing. We will pay particular attention to the challenges and opportunities opened in biomedical sensors[4], energy applications, and wearable electronics that are critical for the future realization of technological paradigms such as the Internet of Everything.



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