

Realization of common platform technologies, facilities and equipment that create innovative knowledge and products

R&D Project Title Developing IR sensing technology for innovative analysis and diagnostics based on graphene light emitters

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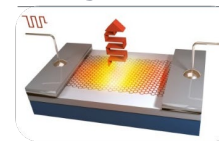


R&D Team :

Summary :

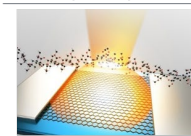
We will create a new healthcare, medical, and lifestyle paradigm by realizing a high-spatial resolution and high-speed infrared spectroscopic and microscopic device using a graphene light emitter, and by creating innovative analysis and diagnostic technologies. Infrared spectroscopy has been used in a variety of fields as a technology for identifying molecules, chemical analysis of food and other products, and environmental measurement. However, there is a growing need for higher resolution local analysis and more sensitive analysis to solve these issues. In this research, we will use the ultra-compact, high-speed thermal light emitters based on graphene for the application of a high-spatial resolution and high-speed infrared spectroscopic and microscopic analysis system, which can realize the marker-less and single-cell bioimaging. We will also improve the performance of the underlying graphene light source chip and develop mathematical techniques necessary for the advanced analysis. We will also promoting the development of applications that make the most of the features of the graphene light source chip.

① Graphene-based IR light sources

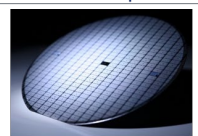


Core technologies

② IR sensing and analysis system

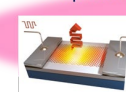


③ Device fabrication technique



Future scope

Graphene



IR analysis



Mathematical technology



Creating innovative analysis and diagnostic technologies

New drugs, treatments and diagnostics

Novel infrared analysis and inspection technology

Pre-Symptomatic Detection of Illness

<http://www.az.appi.keio.ac.jp/maki/index-e.php>