

Chi-Hsien Huang

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Biography

Dr. Chi-Hsien Huang received a Ph.D. degree from National Chiao Tung University in 2004. Afterward, he worked as a senior engineer in TPO Displays Corp. (merged by Innolux Corp. in 2009). In 2007, he joined Tohoku University, Japan as a postdoctoral fellow and became an assistant professor at the Institute of Fluid Science in 2009. In 2013, he joined the Department of Materials Engineering, Ming Chi University of Technology, Taiwan as an assistant professor and became a full professor in 2022. His research interests include graphene synthesis, surface functionalization, and applications. His group developed a unique technique of low-damage plasma treatment to realize atomic layer oxidation. With this technique, his group successfully functionalized bilayer graphene to become an atomically layered composite of graphene oxide (biorecognition element)/graphene (transducer). Based on the layered composite, his groups developed various types of biosensors. More recently, his group collaborates with Chang Gung Memorial Hospital to perform clinical tests. He will be devoted to realizing the practical use of graphene-based biosensors in the near future.

Selected SCI Papers

1. Ultra-low-edge-defect graphene nanoribbons patterned by neutral beam, *Carbon* 61 (2013) 229.
2. Fluorinated graphene as high performance dielectric materials and the applications for graphene nanoelectronics, *Sci. Rep.* 4 (2014).
3. Ultra-low-damage radical treatment for the highly controllable oxidation of large-scale graphene sheets, *Carbon* 73 (2014) 244.
4. Preparation of large-area graphene oxide sheets with a high density of carboxyl groups using O₂/H₂ low-damage plasma, *Surf. Coat. Tech.* 303 (2016) 170.
5. Surface micro-/nanotextured hybrid PEDOT: PSS-silicon photovoltaic cells employing kirigami graphene, *ACS Appl. Mater. Interfaces* 11 (2019) 29901.
6. Effects of π -electron in humidity sensing of artificially stacked graphene bilayers modified with carboxyl and hydroxyl groups, *Sens. Actuators B Chem.* 301 (2019) 127020.
7. A chemiresistive biosensor based on a layered graphene oxide/graphene composite for the sensitive and selective detection of circulating miRNA-21, *Biosens. Bioelectron.* 164 (2020) 112320.
8. Dual-gate enhancement of the sensitivity of miRNA detection of a solution-gated field-effect transistor featuring a graphene oxide/graphene layered structure, *ACS Appl. Electron. Mater.* 3 (2021) 4300.
9. Electrochemical sensors for sulfamethoxazole detection based on graphene oxide/graphene layered composite on indium tin oxide substrate, *J. Taiwan Inst. Chem. Eng.* 131 (2022) 104155.
10. A chemiresistive biosensor for detection of cancer biomarker in biological fluids using CVD-grown bilayer graphene, *Microchim. Acta* 189 (2022) 1.