Graphene and 2D Materials for Future Electronics – Indian Perspective

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Graphene and other two-dimensional (2D) materials are upcoming materials in electronics and optoelectronics [1]. India Innovation Centre for Graphene (IICG) is envisioned to investigate the science and technology of graphene and other 2D materials. This centre envisages partnering effectively with industrial-academic activities to promote innovative and adventurous research emphasizing applications. C-MET, Thrissur centre leads the research activities of IICG which undertake R&D, Innovation and Capacity building activities in the area of graphene, and other 2D material systems for sensors and actuators, energy storage and harvesting, graphene – CMOS integration, and wearable devices with a view to develop indigenous technologies and products. IICG works on 2D materials based optical actuators, transparent acoustic transducers, sensors, supercapacitors [2], composites, inks, paints and coatings, etc. and is now extending its research activities to graphene MEMS devices and graphene - CMOS integration.

References

[1] Zhaoning Hu, Yixuan Zhao, Wentao Zou, Qi Lu, Junhao Liao, Fangfang Li, Mingpeng Shang, Li Lin, and Zhongfan Liu, Adv. Funct. Mater. 32(2022) 2203179.
[2] Suraj Subramanian, Mejo Akkaraparambil Johny, Muralidharan Malamal Neelanchery, Seema Ansari, IEEE Transactions on Power Electronics, 33 (2018) 10410-10418

Figures

Figure 1: Graphene Supercapacitors made by IICG/C-MET

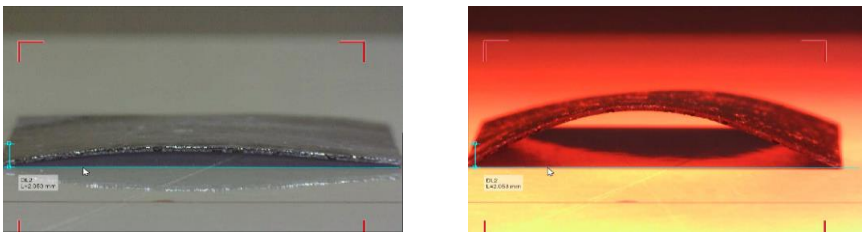

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Figure 2: Optical Actuators