

Design and development of smart nearable and wearable health-friendly products based on graphene, through material-centered design

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Efforts to research and develop smart wearable systems have been increasing in both academia and industry. It is estimated that there will be 5.5 billion users of mobile and wearable technology around the world by 2019^[1].

On the other hand, graphene and its incredible properties at the nanoscale imply a change in the paradigm established by the laws of classical physics, and raise new impressive applications in many fields^[2].

Currently graphene is being studied in scientific communities, but most companies and individuals do not yet know of its existence and / or potential usability^[3]. In this regard, designer and company are the keys to transmit scientific knowledge to people through the application of its products.

This application is the easiest way for the public to understand the properties and characteristics of graphene. Therefore, using graphene as a key element to add value to a product is a clear strategy to break boundaries in this field.

Aiming to connect science and society, the present work is focused on the creative process followed by design engineers to develop new products^[4], setting graphene as the starting point of this process.

The design and development of smart soft or hard wearable devices has been carried

out, taking into account current trends such as the internet of things and the e-health.

Hence, six graphene-centered products are presented: GLUFO, a non-invasive device of constant control of the glucose; BREIO, a device that allows awareness of the body and mind to reduce anxiety; ODO, a non-invasive system of self-control of the cholesterol levels in blood; PURLEAF, a water filtration system to detect microbacteria in uncontrolled waters; OISHY, a smart dishware which detects the cholesterol, salt and sugar levels in food; and METANOIA, a device that detects stress and improves the health status through tai-chi.

References

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- [4] Hugh Dubberly, *How do you design?*, Dubberly Design Office (2004)

Figures



Figure 1: GLUFO, glucose control device developed through graphene-centered design