

Graphene as a new material for Li-ion batteries

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Abstract

In this talk I will discuss how graphene can be employed as a new material in the production of Li-ion batteries. I will first highlight market needs and opportunities [1] and then discuss the challenges related to the material production and quality certification [2]. I will present and discuss our activities, obtained in the framework of the European Graphene Flagship, leading to a hybrid anode material for lithium-ion batteries, encompassing silicon nanoparticles embedded onto graphene and synthesized via a scalable wet-jet milling method [3,4,5]. This synthesized composite, reinforced by a network of conductive carbon black exhibited electrochemical behavior that significantly supersedes the performance of a Si-dominant electrode structures [6].

REFERENCES

- [1] V. Pellegrini et al. Solid State Communications 113733 (2019)
- [2] A. Del Rio Castillo, et al., Materials Horizons 5, 890 (2018)
- [3] S. Palumbo, et al. ACS Appl. Energy Mater., 2 1793 (2019)
- [4] R. Malik, et al. 2D Mater. 8 015012 (2021)
- [5] <https://ec.europa.eu/digital-single-market/en/news/pinch-graphene-increase-batteries-lifetime-and-capacity>
- [6] S. Abuali, et al submitted