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## Interaction of alkali metals and Graphene: a LEEM/PEEM study

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One of the most common approaches to introduce improvements for graphene future technological applications is the intercalation of atoms or molecules through graphene. Among the different studies that have been done, the intercalation of alkali metals have been proven to be very appealing to engineer the band structure of graphene. In particular, lithium and more recently sodium also stand out due to their direct application on graphene ion-batteries. In this sense, our work focuses on a novel approach to intercalate lithium<sup>1</sup> and sodium<sup>2</sup> through graphene by means of photon irradiation. A thin film of LiCl or NaCl previously grown on top of graphene is irradiated with soft X-ray photons leading to a cascade of physico-chemical reactions. Upon the salt photodissociation we find fast chlorine desorption and a complex sequence of alkali intercalation processes. The full sequence of processes has been studied in real-time by a multi-technique in-situ characterization in the PEEM/LEEM end station of Circe at ALBA Synchrotron.

### References

1. Azpeitia, J. *et al.* LiCl Photodissociation on Graphene: A Photochemical Approach to Lithium Intercalation. *ACS Appl. Mater. Interfaces* (2021). doi:10.1021/acsami.1c11654
2. Palacio, I. *et al.* Reversible graphene decoupling by NaCl photo-dissociation. *2D Mater.* **6**, 025021 (2019).

### Would you like to participate in the Poster Prize competition?

No

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