



Contribution ID: 59

Type: **Oral contribution**

Depth distribution of alkali metal ions on supported graphene in the presence of water

Wednesday, 7 December 2022 11:00 (20 minutes)

The interaction of alkali ions with multilayer graphene is critical in many applications, for example in energy storage devices. This requires a detailed understanding of ion interactions with carbonaceous layers. The mechanism of ion intercalation into graphene can be different from that observed for hard graphite. We investigated the vertical alkali ion (Na, K, Cs) distribution on multilayer graphene deposited onto SiO₂ in vacuum and in the presence of water vapor using Standing Wave Ambient Pressure Photoemission Spectroscopy. It was found that Cs, K, and Na ions do not intercalate into multilayer graphene under vacuum conditions. The most likely reasons for this behavior are the reversibility of the process due to large inter-sheet spacing or lack of time for intercalation. When exposed to water vapor, Na ions intercalate soft carbon whereas Cs ions do not. This is a clear indication for the difference in the intercalation mechanisms on hard graphite and soft graphene.

if "Other", please specify:

I apply for a travel grant

No

Primary author: SHAVORSKIY, Andrey (MAX IV Laboratory)

Co-authors: BLUHM, Hendrik (Lawrence Berkeley National Laboratory); SCARDAMAGLIA, Mattia (MAX IV Laboratory); NEMŠÁK, Slavomir (Advanced Light Source, Lawrence Berkeley National Laboratory)

Presenter: SHAVORSKIY, Andrey (MAX IV Laboratory)

Track Classification: Surface science/chemistry