

Surface analyses by XPS and Auger spectroscopy of electrodes materials for lithium ions batteries

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Beside the industrial challenges to enhance the material efficiency for the energy storage, lithium ion batteries are under the spotlight as a candidate for powering many devices. It goes without saying that a deep fundamental research on the mechanisms involved during the electrochemical cells operating is required to bring optimal solutions with higher safety and efficiency requirement. Within this framework, X-ray Photoemission spectroscopy and Auger spectroscopy can provide valuable information regarding the redox process and Solid electrolyte interface formation occurring during batteries cycling.

In this practical session, we will screen the basic theory of both spectroscopies and shows two examples of applications. $\text{LiNi}_{0.33}\text{Mn}_{0.33}\text{Co}_{0.33}\text{O}_2$ cathode and Graphite anode materials will be analyzed by XPS and Auger in the aim to probe the surface chemistry and morphological aspect of both electrode materials.

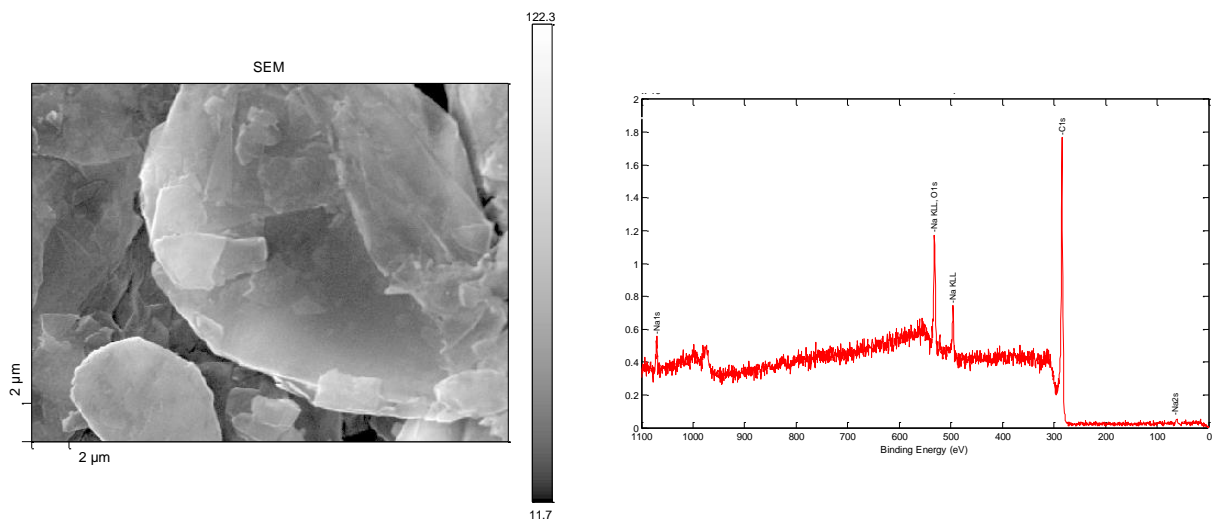


Figure 1: Auger- SEM image of graphite electrode and XPS related survey spectrum