Developing methods for In-situ TEM and potential studies in energy storage, electrochemistry, material science, and bioscience etc.

Yesibolati, Murat Nulati; Canepa, Silvia; Møller-Nilsen, Rolf Erling Robberstad; Lagana, Simone; Sun, Hongyu; Mølhave, Kristian

Published in:
Book of Abstracts. DTU's Sustain Conference 2015

Publication date:
2015

Document Version
Publisher's PDF, also known as Version of record

Citation (APA):

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.
Developing methods for In-situ TEM and potential studies in energy storage, electrochemistry, material science, and bioscience etc.

Murat Nulati Yesibolati¹, Silvia Canepa¹, Rolf Møller-Nilsen¹, Simone Laganà¹, Hongyu Sun¹, Kristian Mølhave*¹

1: DTU Nanotech

*Corresponding author email: kristian.molhave@nanotech.dtu.dk

Transmission electron microscope (TEM) is capable of imaging with a significantly high resolution, i.e., scale less than sub nanometer [1]. Conventional TEM can provide information including, morphology, composition, topographical and crystalline etc. Thanks to the construction of micro/nanolab in TEM holder, recent years witness the rapid development of dynamic process studies with high spatial and temporal resolution. Remarkable research results have been demonstrated, for instance, nucleation process[2], crystal growth[3], intrinsic electrochemistry reactions for micro/nano battery[4].

Currently, we focus on designing and fabricating TEM holders with different capabilities for various applications. For instance, a TEM holder (Fig. 1a) with liquid flow and 5 electrical contacts is developed. It has a closed cell configuration (Fig. 1b) which could be used for battery, electrochemistry and bioscience researches. An open cell structured TEM holder with 16 electrical contacts is in the final stage of production. A TEM holder with heating/magnetic/optical elements is also under consideration. More information about different TEM holders and corresponding chips will be demonstrated in the conference. You are sincerely invited to make collaborations with us.

Figure 1. a). Schematic view of the manufactured TEM holder with liquid flow and 5 electrical contacts; b). Schematic cross section view of a double-chip setup with electron transparent window (SiNx) which is used for observing.

References