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Transportable Device for Transference of Atmosphere Sensitive Materials from Glove Box to High Resolution Scanning Electron Microscope

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Moisture or air sensitive materials are often encountered in fields such as battery, pharmaceutical, or catalyst R&D. Study of their microstructures, which determine their functionalities, is of primary importance. It often implies the use of electron microscopy but the transfer to the microscope chamber usually results in exposure to the surrounding atmosphere therefore modifying the materials. For example, research on high energy battery involves highly reactive materials based on lithium. To study their degradation in aged batteries, High Resolution Scanning Electron Microscopy (HRSEM) is a valuable technique, and to protect these sensitive materials during their transport, from the protective atmosphere of the glove box to the HRSEM sample chamber, we have constructed a transportable device. This transfer device is usable in connection with instruments such as Zeiss Merlin and Zeiss 1540 XB.

The successful use of the transfer device is illustrated by the imaging performed on high energy battery materials.