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**Abstract Formulary**

**Presentation type:** **Oral** ✔ **Poster** ☐

**Title:** Handling aspects for aerogels using supercritical drying processes

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ABSTRACT (Space limited to 2200 characters)

There are a lot of similarities between the supercritical drying process of aerogels and traditional extraction processes for natural raw materials using supercritical $CO_2$. However, there are some major differences, most of which are due to the nature of the raw material. While for traditional extraction processes natural compounds are treated in the corresponding plants, aerogel drying processes are working with a raw material consisting of a considerable amount of organic solvent. Thus, the corresponding processes have to be evaluated according to the nature of the potentially hazardous material. Questions to be addressed usually cover health protection and aspects of explosion protection.

These questions have to be addressed for process steps, where the raw material can be exposed to the plant operator and/or to the atmosphere while still containing a considerable amount of solvent. This mainly includes the handling processes of the material, while not only the handling system itself might be influenced, but also the charging and discharging system of the corresponding high pressure equipment and adjacent devices. Furthermore, all areas with considerable amounts of stored solvent at elevated pressures are potential areas where explosion protection has to be considered or at least has to be regarded.

This presentation gives an overview on traditional handling processes for supercritical extraction plants and addresses the changes that have to be taken into account when handling aerogels with considerable amounts of solvent. Handling processes do not only cover the product inserts but also the closure systems. Furthermore, an overview is presented on the relevant data for an adequate design of an industrial aerogel drying plant. An indication on design questions for explosion proof design for a complete industrial scale plant are addressed as well.