Vlákna amorfního oxidu křemičitého jako materiál pro sorpci, separaci, katalýzu a součást baterií

Fáze vývoje technologie

Fáze 3

Validace technologie a její přenesení do reálného prostředí. Testování technologie mimo laboratoř a její úprava pro externí podmínky.

Status IP ochrany

CZ patent granted

Strategie pro hledání partnera

Co-development, Licencování

Instituce

Univerzita Pardubice

Vlastník

Univerzita Pardubice

Motivace

Silica (SiO2) fibrous material is a special functional material with unique properties represented by amorphous fiber structure. These silica fibers can adsorb significantly more water than commercially available silicagel of the same mesoporous character. This feature is especially apparent in the range of medium relative humidity (30-70 % RH), which is industrially the most important range for adsorption (in electronics, food, chemical industries, and numerous others). Owing to its porosity the fibrous sorbent can be desorbed for its next use at significantly lower temperature (at least 20°C lower), which has positive effect on the cost figure of the process. High specific surface area and mesoporosity are the main advantages and make the material especially suitable for sorption and catalytic applications. The material can be used as an adsorbent, catalytic carrier, battery electrolyte etc.

Popis

Silica fibrous material is a special functional material with unique properties represented by amorphous fiber structure. This very fine material is produced by Centrifugal Spinning technology which enables to produce fibers with diameters between 800-1200 nm. Fibers can be delivered in different modifications, either as COTTON or POWDER (after milling that leads to fiber shortening to several microns) and can be produced in large volumes with easy and fast upscaling capacity. The SiO2 fibers have a great chemical and thermal resistance, tremendous surface to volume ratio (800m2/1 gram) and show mesoporous characteristics. All these parameters make the fibers excellent sorbents e.g. for absorbing undesired air moisture which is an important process in many industries (electrical engineering, food processing, chemistry). At the same time, it is possible to easily and effectively desorb them and use them repeatedly. In addition, the material can adsorb various VOCs, heavy metals and other

compounds. This material has already found uses in catalytic applications, as a highly resistant battery separator or as a special chemically and thermally resistant filtration material.

Komerční využití

We offer a license to produce the presented materials and we look for a cooperation in the development of specific applications for use of the material.