INNOVATIVE PROCEDURE FOR THE PREPARATION OF SILICA FILLINGS WITHOUT SHRINKAGE

TECNOLOGÍA PATENTADA

DATOS DE CONTACTO:

Research Results Transfer Office-OTRI
University of Alicante
Tel.: +34 96 590 99 59
Email: areaempresas@ua.es
http://innoua.ua.es

RESUMEN

The research group Carbon Materials and Environment which belongs to the Inorganic Chemistry Department and the University Materials Institute of the University of Alicante has developed a procedure to prepare silica fillings preventing their shrinkage by the deposition of a thin film prior to the synthesis of the filling. Modifying the said thin film (microporous or mesoporous) the filling properties are modified, obtaining highly satisfactory results in the case of the mesoporous thin films in all case studies (different supports). This method also allows obtaining silica fillings with different diameters and their incorporation into different types of supports such as glass, steel or honeycombing cordierite monoliths.

Silica fillings are nowadays employed in applications as for example stationary phase in chromatography columns, support for the immobilization of bioactive molecules, catalysts and/or catalyst supports, polymer fillers, etc. Following this procedure the shrinkage of the fillings is avoided, which is a common occurrence with the established preparation protocols.

VENTAJAS Y ASPECTOS INNOVADORES

MAIN ADVANTAGES OF THE TECHNOLOGY

Previous deposition of a thin film allows:
- Avoiding shrinkage, thus reducing the detachment of the monolith provoked by this effect.
- Increasing the adherence of the monolith to the employed support walls.
- Process can be applied to different supporting materials.

INNOVATIVE ASPECTS OF THE TECHNOLOGY

- Method based on sol-gel methodologies, modified to overcome shrinkage and detachment phenomena.
- Use of simple silica precursors which are furthermore common to all supports.
- Use of environmentally sustainable chemicals.
- Extractions with organic solvents are avoided.
- Supports with inner diameters larger than those found in the literature.
- Superior mechanical stability of the prepared filling.

APLICACIONES DE LA OFERTA

This technological development may be applied in:
- Development of standard or HPLC columns.

- Production of catalytic reactors and microreactors.

COLABORACIÓN BUSCADA

The research group seeks companies interested in acquiring this technology for its commercial exploitation through different technology transfer pathways:

- Patent licensing agreements.
- Development of joint R+D Projects for the adaptation of the developed technology to the industry needs.
- Technical cooperation, subcontracting and R+D consultancy.