

Title (en)

METHOD FOR INDUCING A VOLUMETRIC CHANGE IN A NANOPOROUS MATERIAL

Title (de)

VERFAHREN ZUR INDUKTION EINER VOLUMETRISCHEN VERÄNDERUNG IN EINEM NANOPORÖSEN MATERIAL

Title (fr)

PROCÉDÉ POUR INDUIRE UNE MODIFICATION VOLUMÉTRIQUE DANS UNE MATIÈRE NANOPOREUSE

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Application

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Abstract (en)

[origin: WO2011112093A1] The invention is directed to a method for inducing a surface stress-induced volumetric change in a nanoporous material and to a device for carrying out the method. The method of the invention comprises - accumulating polar molecules onto the surface of the nanoporous material by physical adsorption of the polar molecules from the vapour phase thereby inducing surface stress to said surface; or - dissipating accumulated polar molecules from the surface of the nanoporous material by physical desorption of the polar molecules into the vapour phase thereby inducing surface stress to said surface, wherein the nanoporous material comprises a nanoporous metal or alloy. The device comprises a) a nanoporous metal material which, upon physical adsorption from the vapour phase or physical desorption into the vapour phase of polar molecules onto or from the surface of the nanoporous metal material, exhibits a volumetric change; and b) a mechanism for detecting and/or transferring the volumetric change.

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