

Title (en)

SOL-GEL PROCESS FOR PRODUCING SYNTHETIC SILICA GLASS

Title (de)

SOL-GEL VERFAHREN ZUR HERSTELLUNG VON SYNTHETISCHEM QUARZGLAS

Title (fr)

PROCEDE SOL-GEL PERMETTANT DE PRODUIRE UN VERRE DE SILICE SYNTHETIQUE

Publication

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Application

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Abstract (en)

[origin: CA2398876A1] An improved sol-gel process is disclosed for producing a synthetic silica glass article, in which a sol is formed having a silica loading as high as 34 to 40 %. This high loading is achieved by introducing an aqueous colloidal silica suspension into a silicon alkoxide solution and slowly stirring the mixture together, during which time the mixture hydrolyzes and the colloidal suspension is broken down by chemical reaction. This produces a hydrolyzed sol incorporating a suspension of very fine aggregates of colloidal particles, having particle sizes less than about 10 microns. The need for a stabilizing agent and/or continuous ultra-sonicating or violently stirring the sol is eliminated. One application of the process of the invention is in making silica photoblanks exhibiting very high optical transmission at UV wavelengths. For such applications, the silica powder is purified using a chlorination step prior to its being made into the aqueous colloidal silica suspension. In addition, warpage of the silica photoblanks is avoided by using silicon carbide plates as weights during sintering.

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