DRYING SILICA XEROGELS USING MICROWAVES

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Drying process of wet silica-gels obtained from tetramethylorthosilicate (TMOS) has been performed using a Lambda Technologies Microcure variable frequency microwave oven (VFM). Comparison analyses have been carried out using conventional, critical point (CPD) and microwave drying processes (MDP) to evaluate the primary differences between these techniques. The drying process using microwaves was governed by the power applied gradually and the range of frequency used. Furthermore, results obtained using MDP show substantially reduced processing times and suggest an influence of frequency on the porosity of the resulting silica-gel. In addition, the silica surface was studied by Fourier Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM) and helium (He) pycnometry in order to compare the behavior in the three procedures pointing out the pore distribution.