

Abstract: A special class of nano-porous inorganic dielectrics, the silicon dioxide aerogels, with porosities  $>70\%$  were prepared using single and two-step sol-gel processing and a supercritical drying method. Samples, pretreated at temperatures  $800\text{ }^{\circ}\text{C}$  for several hours, and with chemical surface modification by HMDS (hexamethyldisilazane), were subjected to microstructure analysis. Electret properties of these samples, corona charged at temperatures ranging from room temperature to  $200\text{ }^{\circ}\text{C}$ , were studied. Isothermal surface potential decay and thermally stimulated discharge measurements were made. The relationship between the microstructure of these samples and their electret properties was discussed. The electret properties of one of the most important fluoropolymeric electret materials, porous PTFE (polytetrafluoroethylene), also were studied. Our results show that porous dielectrics can be good electret materials