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Study and measurement of the thermal and structural properties of silicate materials (SiO₂)

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The compounds based on SiO₂, are of interest in several fields: as strengthening additives in the potter's clay materials, insulator in electronic compounds and in glass industry, concrete, Polymers... Reactivity of SiO₂ depends on the chemical process that occurs between amorphous or poorly crystallized SiO₂ and the matrix, in turn depends on the surface state of SiO₂ particles. The silanol groups (SiOH) are the main surface reactive sites and their properties (nature, concentration, distribution, accessibility, etc.) will determine the chemical activity of the silica. The aim of this work is to study the dependence between structure properties and reactivity of silica for different SiO₂ compounds. The results show the effect of reaction time and concentration of basic solution (KOH) on creation of the silanol groups on silica surface. A methodology is proposed to quantify different silanol groups on silica surface.

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