
Solar glass and alkali

Does sodium-potassium silicate glass have a mixed alkali effect?

A novel topological analysis using persistent homology found that sodium-potassium silicate glass shows a significant reduction in large cavities as a result of the mixed alkali effect. Furthermore, a highly correlated pair arrangement between sodium and potassium ions around non-bridging oxygen atoms was identified.

Do alkali silicate glasses have a mixed effect?

Table 1 Typical structural properties of the alkali silicate glasses. volume ratio in the alkali silicate glasses increases mono-tonically with the increase in the K₂O amount and cannot provide any evidence for the mixed alkali effect in the intermediate-range structure as well as the NMR data⁸.

Why do alkali silicate glasses have a broader distribution?

This broad distribution is the result of topological disorder according to Cooper and Gupta⁴⁵, and hence, this is a very important characteristic in glass. In the case of alkali silicate glasses, we can see a broader distribution due to the introduction of alkali ions breaking down the Si-O network, which is consistent with previous studies^{10,11}.

How are alkali silicate glasses prepared?

Alkali silicate glasses were prepared from mixtures of reagent grade SiO₂, Na₂CO₃, and K₂CO₃ powders. The mixtures were melted at 1923 K in air. Each melt was quenched and annealed at the glass transition temperature and then cooled slowly by 1 K/min. The nominal and analyzed compositions of the glasses are listed in Table S1.

A new type of alkali-activated material (AAM) was developed for the first time by using waste photovoltaic glass powder (WPGP), blast furnace slag (BF...

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o low thermal budget glass texturization for solar and opto-electronic applications. o Alkaline etch as an alternate to acidic etching avoiding the use of concentrated HF. o Better ...

Why Alkali Content Matters in Solar Glass Production Did you know that alkali consumption directly impacts the durability and efficiency of photovoltaic modules? As solar energy adoption ...

Abstract Na-diffusion from soda lime glass (SLG) substrate to overlayers is found to enhance the performance of CuInGaS₂/CuZnSnS₄ based thin film solar cells. In the present ...

The impact of the changes in glass structure and its correlation to electrical properties is presented. The mixed alkali effect (MAE) is observed due to the presence of two ...

Solar desalination provides a sustainable fix, with researchers developing photothermal materials and designs to improve efficiency and sustainability. Glass materials, ...

Use of glass powder as concrete SCM or in development of lime-pozzolan binders could provide environmental and economical benefits. In exposure to an alkaline pore solution, ...

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It is well recognized that finely ground soda-lime glass exhibits high pozzolanic reactivity. Fine glass grains will not undergo an Alkali-silica reaction (ASR) in the presence of ...

After optimizing a non-hazardous, feasible acidic and alkaline-etched AIT glass, we further showed the proof of concept that the textured AIT glass can be used as an active ...

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