Sol-gel dielectric films for SOI technologies

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SOI-structures are three-layer systems which consist of silicon substrate and a thin layer of silica placed on an insulator (Fig.).

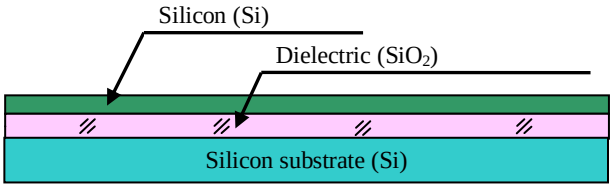

Figure. Scheme of SOI structures

One of the promising methods of producing SOI-structures is sol-gel method. The film-forming solution was prepared based on the silica organic compounds. As a result, the thickness of the dielectric film may be obtained in the range of 0.1 μm to 5.0 μm. The formed films where characterized by high thermal stability (up to 800 °C), mechanical abrasion resistance (3000 cycles of abrasion) and stability in a standard etchant for aluminum (at 40 °C for 20 minutes). The films have the dielectric permeability 3.8 and refractive index 1.4.