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Commentary

# Importance of Porous Silicon Crystalline and its Coupling Process

**Cherepakhin Sahin***

*Department of Chemistry, Karadeniz Technical University, Trabzon, Turkey*

## DESCRIPTION

Silicon material is one of the most important material for cornerstone and used in nanotechnology applications. It is the most fascinating physical and chemical properties that are usually formed by anodic polarization of single crystalline silicon in HF based solutions.

It is least toxic, biocompatible and promising to be a green technology. The solid Si metal has lower segregation coefficient of impurities. The quantum confinement effects at particular room-temperature of photoluminescence were discovered from silicon material. The technique such as thermal oxidation or surface derivitization lowers the reactivity by replacing the silicon-hydride species of functional groups.

Thermally Carbonized Porous Silicon (TCPSi) microparticles are chemically modified with organo functional alkoxysilane molecules which are used for silanization process. The melting point of Si, in the oxygen precipitates and it can facilitate the impurities at high oxygen concentration which helps during solar manufacturing process. The degradation product silicic acid is non-toxic.

The photoluminescence and electroluminescence are derived from Si quantum dot structures that are produced during etch. As anodic etching is also known as electrochemical etching, this has been the most common method for fabrication of porous silicon and also based on p and n-type porous silicon. Before the silane coupling, the TCPSi surface was activated by immersion of Hydrofluoric Acid (HF).

Due to electrochemical mechanism of stain etching, the holes have a critical role in the removal of silicon atoms and formation of pores. The high-efficiency for visible photo and electro-luminescence material are opened way for the development of silicon-based optoelectronic devices that are fully compatible with standard industry processes.

The injected holes don't recombine with free electrons of the silicon. The formation of Si-C bond reactions includes hydrosilylation, hydrocarbonization, carbonization and reductive electrochemical grafting, with in the chemical methods. The silicon surface of SiNWs can reduce the silver (I) and copper (II) ions to metal aggregates by various morphologies on SiNW surface at room temperature.

The highly reactive Si-Li surface species are hydrolyzed by water, which results in significant surface of oxidation. The radiolabeled Porous Silicon (PSi) particles for nuclear imaging and theranostics are imaging modality which has been applied for the development and evaluation of PSi-based drug delivery systems.

The quenching of photo luminescent by chemical adsorption was studied based upon $HNO_3$ which is chemically oxidized porous silicon. The anionic surfactant of local dielectric effects increases the non-radiative decay rate in porous Si metal.

Hydrosilylation is the insertion of alkene or alkyne into a surface of Si-H bond, which is an ideal approach to producing covalent Si-C bonds that can be carried out by number of ways. The mechanical properties are maintained by liquid silicon rubber which as extremely low and high temperatures.

The surface-bound Li can also be replaced with the help of H or acyl species by addition of trifluoroacetic acid, acetyl chloride, heptanoyl chloride, or 4-butylbenzoyl chloride. The nanoporous silicon has been intensively studied as a platform for drug carriers in sustained release of drug formulations for the water which is poorly soluble or sensitive to drugs and for targeted drug delivery.

## CONCLUSION

Polycrystalline and germanium silicon films have similar properties of SCS. The porous Si can be integrated into well-established Si microelectronics fabrication techniques allows its use in sophisticated devices for medical, sensor, thermoeletric, photovoltaic, and storage applications. The latter treatment reduces the rate of air oxidation for porous silicon surface. Stabilizers are added in silicon rubber for improvement of silicon rubber's which is resistant to heat.

**Correspondence to:** Cherepakhin Sahin, Department of Chemistry, Karadeniz Technical University, Trabzon, Turkey, Email: sahin@chere.uni.com

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