

# **LIGHT EMITTING DEVICES BASED ON SILICON NANOSTRUCTURES**

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The development of silicon-based photonics for on-chip integration with the corresponding electronics is an important field of research the last fifteen years. Detectors, waveguides, modulators etc have been already demonstrated, so the only remaining component towards silicon optoelectronics is an efficient and stable light source. In this paper, recent progress on the fabrication and properties of such devices based on silicon nanostructures will be reviewed. Transparent conducting oxides on their light emitting surface offer important advantages for better efficiency and stability. Silicon nanocrystals, nanowires or amorphous and Er-doped Si nanostructures may be used and their corresponding properties will be reviewed. Combination of light emitting devices with photonic crystals to reduce total internal reflection of the emitted light will be discussed. The luminescence quenching processes limiting quantum efficiency in these devices will also be discussed.