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Photoluminescence of etched SiC nanowires[1] POLITE D. STEWART, JR., Southern University Baton Rouge, LA, RYAN RICH, T.W. ZERDA, Texas Christian University Fort Worth, Texas — SiC nanowires were produced from carbon nanotubes and nanosize silicon powder in a tube furnace at temperatures between 1100°C and 1350°C. SiC nanowires had average diameter of 30 nm and very narrow size distribution. The compound possesses a high melting point, high thermal conductivity, and excellent wear resistance. The surface of the SiC nanowires after formation is covered by an amorphous layer. The composition of that layer is not fully understood, but it is believed that in addition to amorphous SiC it contains various carbon and silicon compounds, and SiO2. The objective of the research was to modify the surface structure of these SiC nanowires. Modification of the surface was done using the wet etching method. The etched nanowires were then analyzed using Fourier Transform Infrared spectroscopy (FTIR), transmission electron microscopy (TEM), and photoluminescence (PL). FTIR and TEM analysis provided valid proof that the SiC nanowires were successfully etched. Also, the PL results showed that the SiC nanowire core did possess a fluorescent signal.

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