Erratum: “High efficiency visible electroluminescence from silicon nanocrystals embedded in silicon nitride using a transparent doping layer” [Appl. Phys. Lett. 86, 071909 (2005)]

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In the original publication titled “High efficiency visible electroluminescence from silicon nanocrystals embedded in silicon nitride using a transparent doping layer,” by Cho et al. [Appl. Phys. Lett. 86, 071909 (2005)], we reported on obtaining an external quantum efficiency of 1.6% from light-emitting diodes (LEDs) based on nitride-passivated nanocrystal Si(nc-Si). However, we have recently discovered that there had been a mistake in converting the luminescence spectra into absolute light output values due to usage of an incorrect conversion factor. Therefore, Fig. 3(b) in the original paper should be replaced as below. The correct value, obtained directly using a sensitive optical power meter (Newport 818-SL), is about 0.005%, which is about 300 times less than what had been reported. Thus, while many of the advantages of using nitride passivation such as lower operating voltage and wide tunability in the visible range still remain valid, we can no longer claim that it leads to higher external quantum efficiency of nc-Si based LEDs.

There is a typographical error in the fourth paragraph (lines 6–7) of column 1 on page 071909-2. It should read as “Under these conditions the current density passing through the device is ~12.7 A/cm².” The correction does not affect the context of the letter.

FIG. 3. (b) Emitted EL power vs current passing through the device.