

Characterization of 1D photonic crystal nanobeam cavities using curved microfiber: erratum

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Abstract: An error was made in the calculation of the photonic crystal mode volume. Fixing this error increases our mode volumes by a factor of two and makes our claim of highest Q/V invalid.

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References and links

1. B. C. Richards, J. Hendrickson, J. D. Olitzky, R. Gibson, M. Gehl, K. Kieu, U. K. Khankhoje, A. Homyk, A. Scherer, J.-Y. Kim, Y.-H. Lee, G. Khitrova, H. M. Gibbs, "Characterization of 1D photonic crystal nanobeam cavities using curved microfiber," *Opt. Express* **18**(20), 20558–20564 (2010).
2. A. R. M. Zain, N. P. Johnson, M. Sorel, and R. M. De La Rue, "Ultra high quality factor one dimensional photonic crystal/photonic wire micro-cavities in silicon-on-insulator (SOI)," *Opt. Express* **16**(16), 12084–12089 (2008).

In our article [1], we state that the mode volume of the 1D photonic crystal nanobeam cavities is $0.27(\lambda/n)^3$. This value appears in the caption for Fig. 1, in the last paragraph of section 4 and in the conclusion. Recently, it was discovered that a factor of two error was made in the calculation of cavity mode volume. This error results in an increase in the mode volume of these cavities to $0.54(\lambda/n)^3$.

We make the claim in the last paragraph of the introduction, at the end of section 4 and in the conclusion that we have observed the highest Q/V ratio as of the date of publication. Using this new mode volume, and our reported highest Q of 75,000, our calculated Q/V ratio becomes 139,000. This value is no longer larger than the Q/V ratio of 173,000 reported by the group of De La Rue [2], making our claim invalid.