Corrigendum: Whispering-gallery mode silica microsensors for cryogenic to room temperature measurement

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In [1], the analytical relationship for temperature tuning of WGMs is \( \Delta \lambda / \Delta T = (\alpha + \beta) \lambda \), where \( \alpha \) is the linear thermal expansion coefficient defined as \( \alpha = (dD/dT)/D \) and \( \beta \) is the thermal optic coefficient defined as \( \beta = (dn/dT)/n \). These relationships were derived and used in our previous publication [2]. However, the \( \beta \) values that we used were taken from [3], where a thermal optic coefficient was actually defined as \( \beta' = dn/dT \), and thus, \( \beta \) should be corrected as \( \beta'/n \). In such case, the correct formula for analyzing theoretical sensitivity should be \( \Delta \lambda / \Delta T = (\alpha + \beta') \lambda = (\alpha + \beta'/n) \lambda \). The authors regret that they did not pay enough attention to the difference between these two definitions and used the values of \( \beta' \) for \( \beta \) in plotting the ‘analytical sensitivity’ curve in figure 8 of [1]. Since the values of the ‘analytical sensitivity’ are calculated based on the measured \( \alpha \) and \( \beta' \) values from bulk materials in the literature, it would be better to use a different term ‘reference sensitivity’. The new corrected figure 8 is plotted here, from which it can be seen that the measured sensitivities from the micro-bead sensors are generally 10–20% greater than those obtained from the reference data.

References

