Corrigendum: Measurement of thermodynamic temperature between 5 K and 24.5 K with Single-Pressure Refractive-Index Gas Thermometry (2020 Metrologia 57 065006)

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Corrigendum: Measurement of thermodynamic temperature between 5 K and 24.5 K with Single-Pressure Refractive-Index Gas Thermometry (2020 *Metrologia* 57 065006)

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We have corrected T and $T-T_{90}$ results in table 9 and figure 34 of the original paper (*Metrologia* 2020 **57** 065006) for the following reasons:

1. An incorrect value of the sensitivity of the standard platinum cobalt resistance thermometer (Chino RS144.08), used to transfer the reference thermodynamic temperature T_{ref} to the single-pressure refractive-index gas thermometry (SPRIGT) system, was used. The manufacturer specification, used in the original paper gives $\mathrm{d}R/\mathrm{d}T = 0.1291\ \Omega\ \mathrm{K}^{-1}$. Post-publication, we checked the value experimentally and found it be 0.1714 (4) $\Omega\ \mathrm{K}^{-1}$.

2. The value of the reference thermodynamic temperature T^* used in an acoustic AGT paper [1] in which the same reference thermometer was employed, the difference being 42 μK at temperatures close to 24.6 K, namely 24.554 948(158) K to 24.554 990(160) K.

As shown in the corrected versions of table 9 and figure 34, the combined effect of the above terms is to lower the

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Table 9. Corrected values of $T_{\mathrm{SPRIGT}}-T_{90,\mathrm{CAS}}$ in the present work. The first four columns of this table replace the data in table 9 of the original paper. The last two columns show the size of the downward temperature shift, which never exceeds 0.24 mK.

T_{SPRIGT}[a]	$u(T_{\mathrm{SPRIGT}})$[a]	$T_{\mathrm{SPRIGT}}-T_{90,\mathrm{CAS}}$[a]	$u(T_{\mathrm{SPRIGT}}-T_{90,\mathrm{CAS}})$[a]	$\Delta T_{\mathrm{SPRIGT}}$[b]	$\frac{\lvert\Delta T_{\mathrm{SPRIGT}}\rvert}{u(T_{\mathrm{SPRIGT}})}$
K	mK	mK	mK	mK	/
24.55535	0.16	−0.35	0.26	−0.24	1.50
23.00025	0.15	−0.21	0.25	−0.21	1.40
21.99973	0.13	−0.05	0.22	−0.19	1.46
20.99828	0.12	0.15	0.20	−0.18	1.50
20.26790	0.11	0.28	0.19	−0.16	1.45
18.99873	0.10	0.56	0.21	−0.14	1.40
17.99977	0.09	0.70	0.22	−0.13	1.44
17.03389	0.09	0.79	0.22	−0.11	1.22
16.00012	0.08	0.81	0.22	−0.10	1.25
15.00062	0.07	0.76	0.19	−0.08	1.14
13.80428	0.07	0.62	0.16	−0.07	1.00
12.00052	0.06	0.37	0.13	−0.06	1.00
10.00094	0.05	0.24	0.13	−0.04	0.80
8.00097	0.05	0.30	0.11	−0.03	0.60
7.00026	0.05	0.37	0.10	−0.02	0.40
6.00006	0.05	0.40	0.11	−0.02	0.40
5.00021	0.06	0.33	0.10	−0.02	0.33

[a]Corrected values in this paper.
[b]$\Delta T_{\mathrm{SPRIGT}} = T_{\mathrm{SPRIGT}} - T_{\mathrm{SPRIGT,\,old}}$, where $T_{\mathrm{SPRIGT,\,old}}$ are taken from table 9 in the original paper.

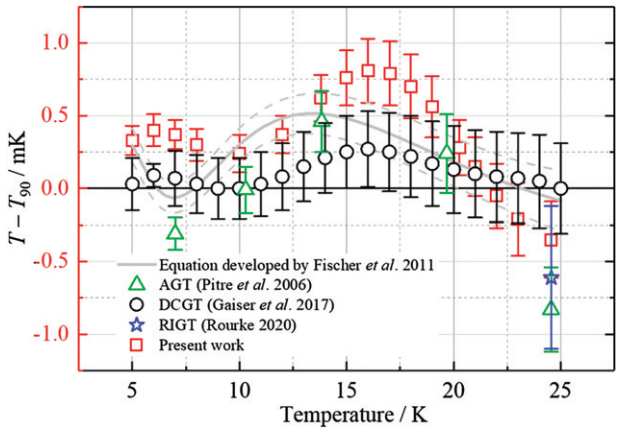

Figure 34. Weighted mean of $(T–T_{90})$ and comparison with the most recently available world average values (the grey lines) calculated using the equation developed by Fischer *et al* [4] and recent results obtained by AGT [53], DCGT [66] and RIGT [67] in the same temperature range. This figure replaces figure 34 of the original paper, the references numbers being the same.

determined thermodynamic temperature T_{SPRIGT} by at most 0.24 mK. This difference is due to the fact that the reference temperatures calibrated using in AGT in France and the setpoint of SPRIGT in China differed by 0.86 mK. Had both experiments used an identical value of *resistance*, no correction would have been necessary.

Note: In the re-analysis of SPRIGT data, for completeness, the most recent and accurate value of the second dielectric virial coefficient B_ε [2] was used. The effect on the temperatures is less than 7 μK at temperatures close to 5 K and much smaller at other temperature.

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