Correction to Supporting Information for "A New 'Quasi-Dynamic' Method for Determining the Hamaker Constant of Solids using an Atomic Force Microscope"

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As noted in the main Correction, the nominal resonance frequencies of the six AFM cantilevers (A-F) listed in Table 1 were incorrectly interpreted to be angular frequencies, ω_0, instead of ordinary frequencies, ν_0, in which $\omega_0 = 2\pi\nu_0$. The effective masses, m, of the cantilevers that were inputted into the dynamic model's governing equation were larger than they should have been (as $m = k_c/\omega_0^2$). The correct versions of Figures S6, S8, S10 and Table S1 are included here.

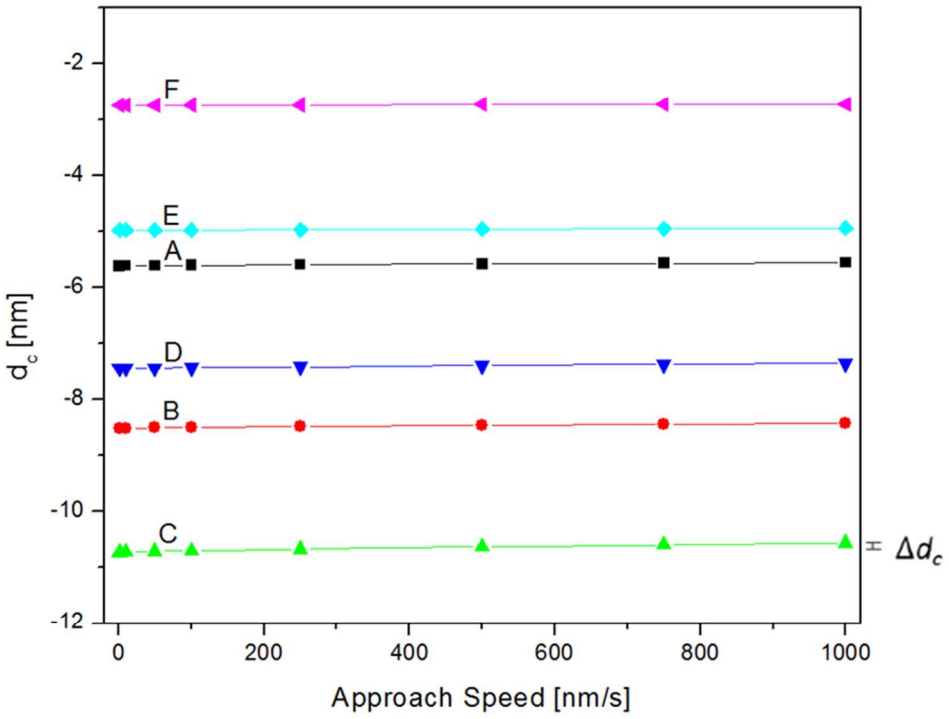

Figure S6: The AFM tip deflection at first contact with the surface, d_c, obtained from the dynamic model, eqs 8 and 9, with the sphere-plate geometry in eq 3, as a function of the approach speed, v_c, for the cantilevers A-F in Table 1. The approach speeds range from a value of zero (the quasi-static limit, with d_c obtained using eq 12) to the AFM's preset value of 1000 nm/s. The following realistic parameters were used: R_t = 100 nm, $A = 1.1\times10^{-19}$ J, and δ = 0.015 nm. For cantilever C, the deviations of their deflections at first contact at 1000 nm/s from their corresponding values at the quasi-static limit are labelled as Δd_c. The lines through the points are guides to the eye.

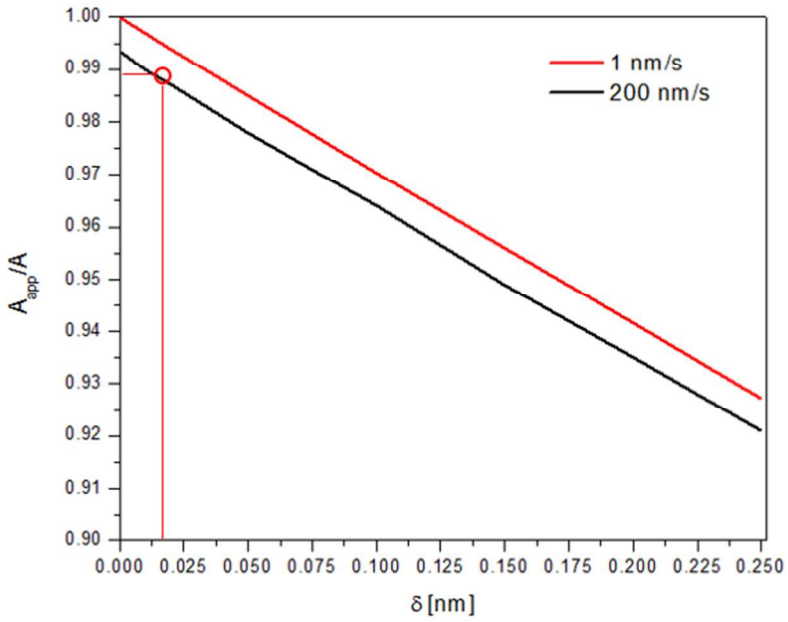

Figure S8: The effect of the sampling resolution, δ, on the apparent Hamaker constant, A_{app}, for the two cantilever-surface approach speeds of 200 nm/s (black) and the near quasi-static limit of 1 nm/s (red). The additional parameters used to simulate the corresponding deflection curves are provided in Table 1 for the MSCT-E cantilever, as well as an A of 101 zJ and an R_t of 100 nm.

Table S1: Complete set of data and error bars for the results presented in Figure 7. The errors for both τ and $\left(d_c/d_{c,qs^*}\right)^3$ correspond to the propagated errors that result from measuring the tip deflections, approach speeds, and resonance frequencies with an absolute error of ca. 2-3%.

	τ	$\left(d_c/d_{c,qs^*}\right)^3$
C	$1.48 \pm 0.07 \times 10^{-4}$	0.99 ± 0.16
	$5.92 \pm 0.03 \times 10^{-4}$	0.93 ± 0.15
	$1.48 \pm 0.07 \times 10^{-3}$	0.78 ± 0.13
	$2.96 \pm 0.14 \times 10^{-3}$	0.67 ± 0.12
D	$8.31 \pm 0.38 \times 10^{-5}$	1.00 ± 0.15
	$3.32 \pm 0.15 \times 10^{-4}$	0.96 ± 0.15

	$8.31 \pm 0.38 \times 10^{-4}$	0.81 ± 0.13
	$1.66 \pm 0.08 \times 10^{-3}$	0.70 ± 0.12
E	$4.19 \pm 0.20 \times 10^{-5}$	0.99 ± 0.17
	$1.67 \pm 0.08 \times 10^{-4}$	0.97 ± 0.16
	$4.19 \pm 0.20 \times 10^{-4}$	0.89 ± 0.15
	$8.37 \pm 0.40 \times 10^{-4}$	0.86 ± 0.14
F	$1.41 \pm 0.07 \times 10^{-5}$	0.99 ± 0.22
	$5.64 \pm 0.27 \times 10^{-5}$	1.01 ± 0.23
	$1.41 \pm 0.07 \times 10^{-4}$	0.95 ± 0.21
	$2.82 \pm 0.14 \times 10^{-4}$	0.95 ± 0.22

In Figure S10, the inputted values of A yield expected errors in A_{app} of less than or equal to 1%, which correspond to a range of τ from 2.2×10^{-7} to 1.2×10^{-7}. Considering that the expected error is ~0.7%, this translates to a difference of ~0.7 zJ, in an absolute sense, from the Lifshitz approximation (i.e. an absolute error of A12 of 100.3 zJ instead of the predicted system A12 of 101 zJ).

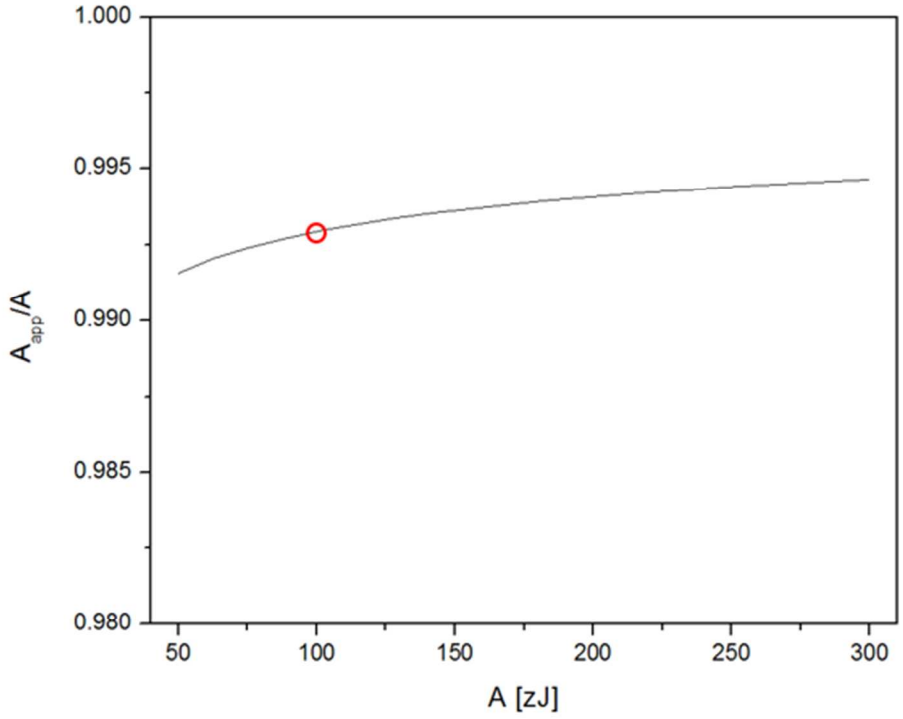

Figure S10: The dependence of the apparent Hamaker constant, A_{app}, on the value of the Hamaker constant, A, inputted into the dynamic model, eqs 8 and 9, for the MSCT cantilever type E and v_c = 200 nm/s. The other relevant parameters are those in Figure 6a. The expected error for the Lifshitz predicted value of the Hamaker constant between amorphous silica and silicon nitride (101 zJ) is highlighted by the red circle.