

Understanding the image contrast of material boundaries in IR nanoscopy reaching 5 nm spatial resolution

- Supplementary Information -

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S1. Individual line profiles for Pt/Ir and W tips

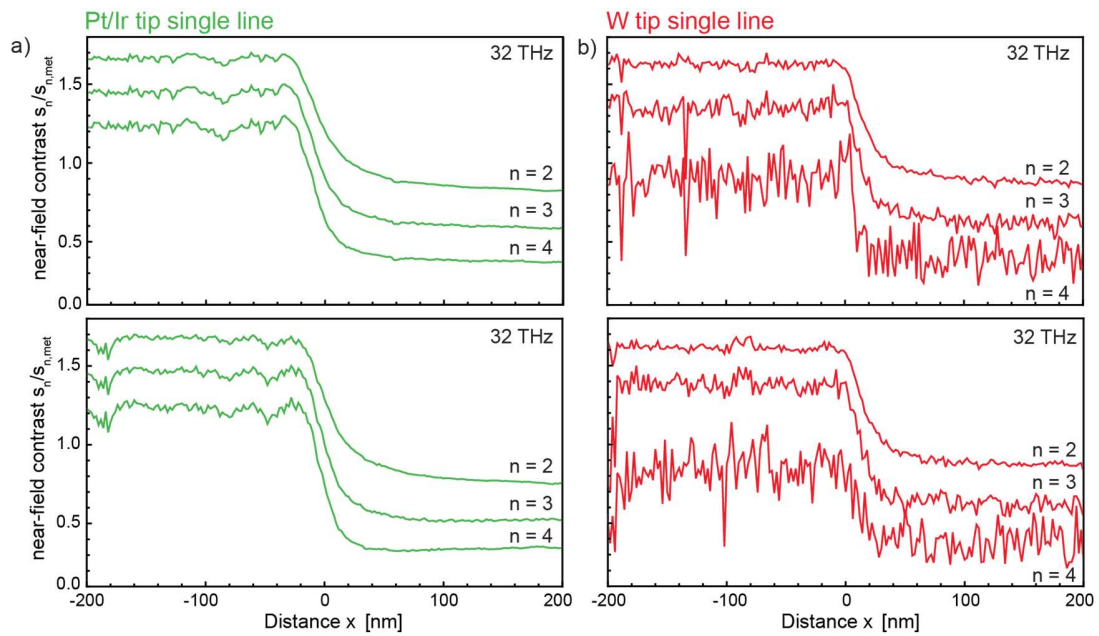


Figure S1: Two different individual s-SNOM line profiles before averaging for a) the Pt/Ir tip and b) the W tip for demodulation orders $n=2, 3, 4$ at 32 THz and tapping amplitude $A=25$ nm.

S2. Comparison of asymmetric vs. symmetric fit of measured line s-SNOM line profiles

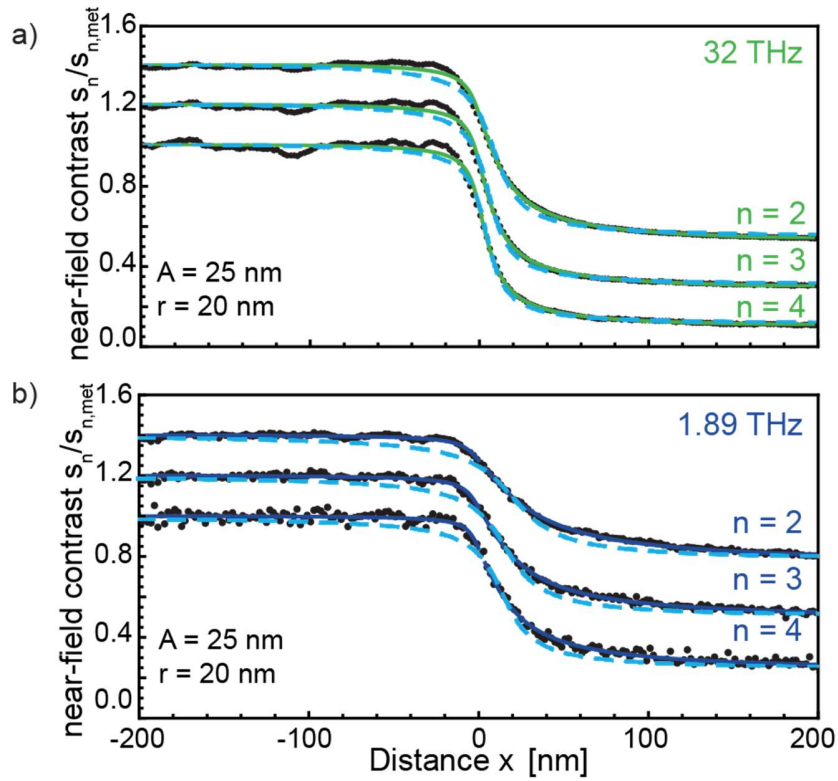


Figure S2: a,b) Measured IR and THz near-field amplitude s_n line profiles (average of 20) for harmonics $n = 2$ to 4 (black dots), and their respective fits using the integral of an asymmetric Lorentzian as described in text (green/blue lines). For comparison, the graphs also show a symmetric fit of the data (light blue dashed line). Tapping amplitude $A = 25$ nm, tip radius $r = 20$ nm. The curves are vertically offset for better visibility.

S3. Comparison of asymmetric vs. symmetric fit of s-SNOM line profiles measured with the W-tip

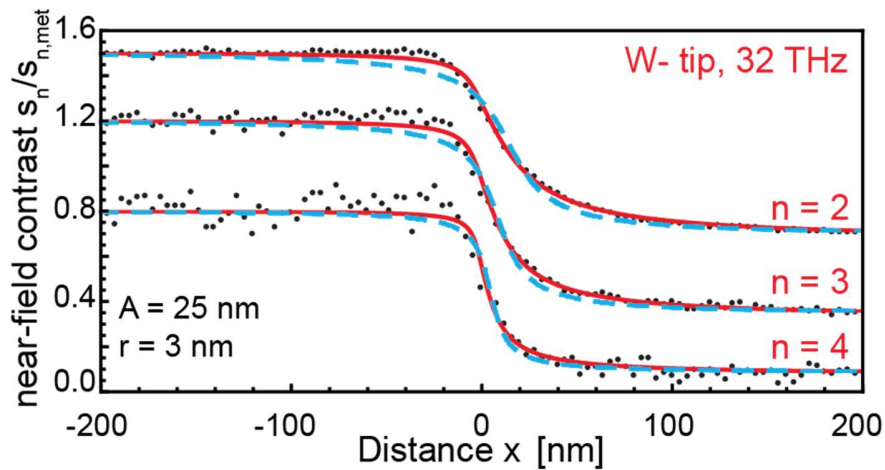


Figure S3: IR near-field amplitude s_n line profiles (average of 50) measured with the W-tip for harmonics $n = 2$ to 4 (black dots), and their respective fits using the integral of an asymmetric Lorentzian as described in text (red lines). For comparison, the graphs also show a symmetric fit of the data (light blue dashed line). Tapping amplitude $A = 25$ nm, tip radius $r = 3$ nm. The curves are vertically offset for better visibility.

S4. IR and THz line profiles without vertical offset for comparison of contrast for different demodulation orders.

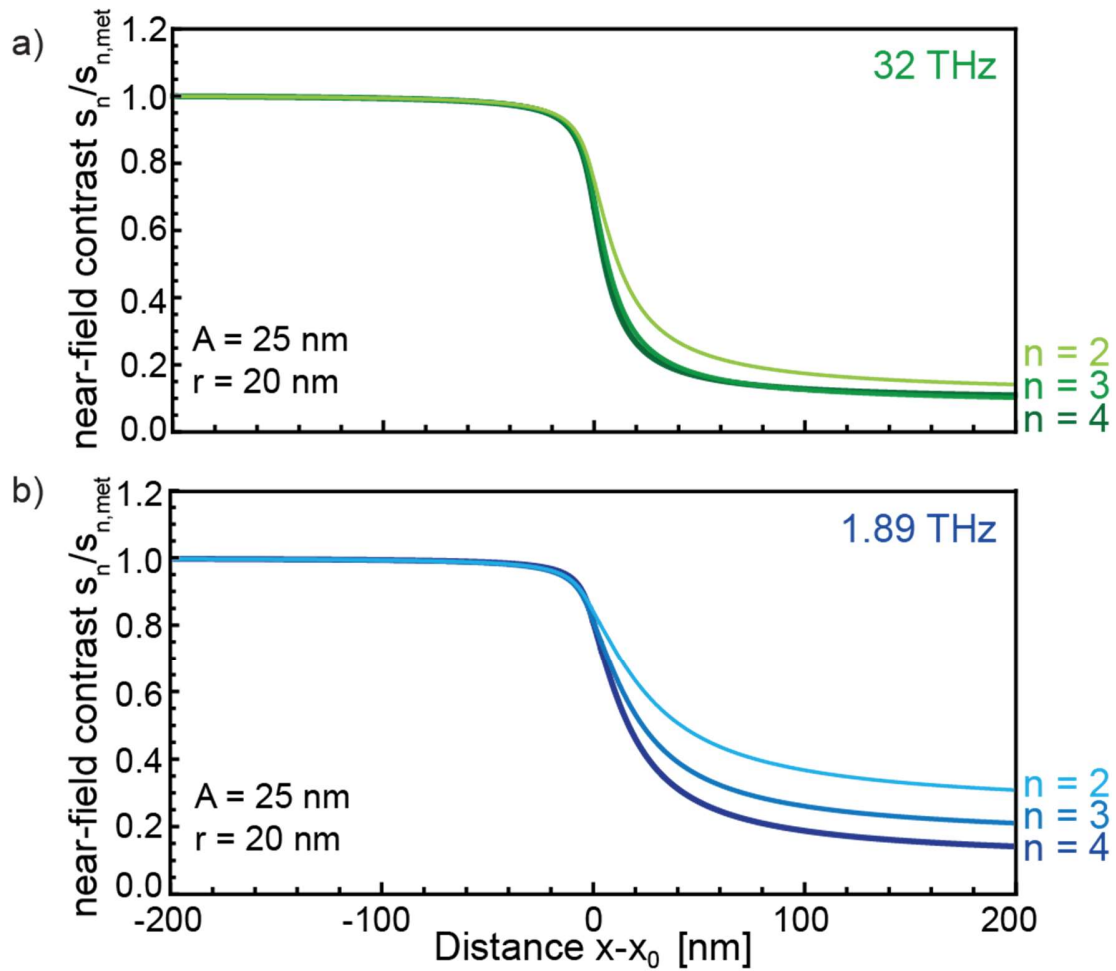


Figure S4: a,b) Fits on near-field contrast $s_n/s_{n,met}$ line profiles presented in Fig. 2 for harmonics $n=2$ to 4 (green/blue lines) as described in the main text. The curves are normalized to the value on metal $s_{n,met}$ and not vertically offset to compare the near-field contrast for different harmonics. For better visibility the measured data points are not shown. Tapping amplitude $A = 25$ nm, tip radius $r = 20$ nm.