

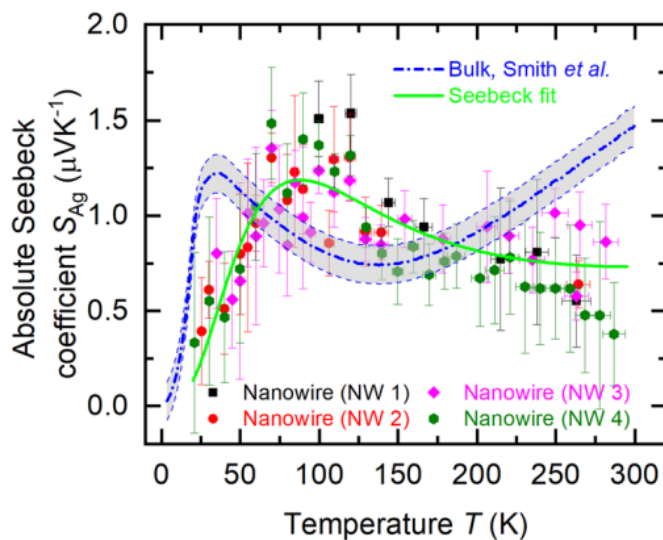
Nanometrology: Absolute Seebeck coefficient of individual silver nanowires

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Short Abstract

We demonstrate a method for determining the absolute Seebeck coefficient of individual metallic nanowires. Both the thermodiffusion and phonon drag contributions to the absolute Seebeck coefficient of single crystalline silver nanowires are reduced compared to bulk silver. In particular, the thermodiffusion part is reduced more than the phonon drag part, the reason for which can be attributed to size effects like surface scattering, leading to an electron mean free path comparable to the nanowire diameter. Suppressing the absolute Seebeck coefficient by design of nanopatterned metallic interconnects may become important for low-noise applications.



Above. Absolute Seebeck coefficient of the silver nanowires versus bath temperature T . The thick dashed blue line indicates the absolute Seebeck coefficient of bulk silver. The solid green line depicts the temperature-dependent fit of the absolute Seebeck coefficient of the silver nanowires.