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A Comparison of Techniques for Analyzing Dielectric Relaxation Spectra Containing DC Conductivity CHAD SNYDER, Polymers Division, NIST, Gaithersburg, MD 20899 — Because of its versatility and broad frequency range, dielectric relaxation spectroscopy (DRS) continues to find new applications in materials science. The one limitation of the technique is that DC conductivity (σ_{DC}) can overwhelm the dielectric loss spectra ($\varepsilon''(\omega)$), making meaningful analysis difficult. As a result of this difficulty, a number of methods have been developed over the years to estimate σ_{DC} and thereby "remove" it from $\varepsilon''(\omega)$. A comparison is made of the benefits and limitations of several of these methods, including graphical methods based on complex plane analysis, curve fitting, and numerical Kramers-Kronig methods.

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