

Apodization Effects In Fourier Transform Infrared

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Apodization Effects In Fourier Transform

- Artifacts may occur in Fourier transform infrared (FTIR) spectra due to the apodization of the interferograms of intense bands. Selected examples of boxcar and triangular apodization effects on difference spectra have been previously reported.

Apodization effects in Fourier transform infrared ...

Applying some type of function to Fourier transform integration to reduce the ripples, as in this example, is called "apodization" and the function is known as an "apodization function." It can be seen from the examples of the box-car waveform and triangular waveform that reducing the ripples implies a compromise between the resolution and peak height.

Fourier Transform and Apodization - Shimadzu

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Fourier Transform and Apodization : SHIMADZU (Shimadzu ...

The effects that finite resolution and choice of apodization function have on Fourier transform (FT) Raman spectra are illustrated by the 839 cm⁻¹ (ν₁) and 914 cm⁻¹ bands of KMnO₄-FT-Raman spectra were recorded at 0.5, 1, 2, 4, 8, 16 and 32 cm⁻¹ resolution using boxcar, Norton—Beer (strong, medium and weak) and triangular apodization functions at each resolution.

The effect of apodization and finite resolution on Fourier ...

It is common practice in Fourier transform spectroscopy to multiply the measured interferogram by an apodizing function in order to reduce the amount of ringing present in the resulting instrumental line shape (ILS).

Apodization Functions for Fourier Transform Spectroscopy

Calculations assuming discrete Fourier-transform data are compared with Monte-Carlo simulations. The effects of zero-filling and apodization are examined for free-induction-decay (FID) signals and for symmetric spin-echo signals in one and two dimensions, with particular attention to features not previously presented in the literature.

Effects of zero-filling and apodization on spectral ...

The term apodization is used frequently in publications on Fourier-transform infrared (FTIR) signal processing. An example of apodization is the use of the Hann window in the fast Fourier transform analyzer to smooth the discontinuities at the beginning and end of the sampled time record. Apodization in digital audio

Apodization - Wikipedia

Apodization makes it possible to exclude effects that occur near the start and/or end of the simulation from the monitors fourier transform. This feature can be useful for filtering away short lived transients that occur when a system is excited with a dipole source, and when studying high Q systems that decay very slowly.

Understanding time apodization in frequency domain ...

The results of experiments and theory analyzing demonstrate that proposed apodization function could suppress sidelobe and decrease the error due to the short double sided interferogram data have been used twice effectively, and the spectral inversion algorithm based on the new apodization function has not need interpolation computing, only has once fourier transform and once apodization, so the efficiency is improved greatly.

The research of apodization method of Fourier transform ...

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FTIR Spectroscopy Basics | Thermo Fisher Scientific - US

FTIR stands for Fourier transform infrared, the preferred method of infrared spectroscopy. When IR radiation is passed through a sample, some radiation is absorbed by the sample and some passes through (is transmitted). The resulting signal at the detector is a spectrum representing a molecular 'fingerprint' of the sample.

NMR Part IV, Apodization and Zero Filling

In Fourier spectrometry, apo- dization denotes use of alternate windowing func- tions to artificially reduce the effects of abruptly ending the FTS recording and thereby suppress the ringing of FTS signals.

Apodization effects in the retrieval of volume mixing ...

explored. The Fourier transform was applied to modeled spectral data comparable to the behavior of a Michelson interferometer in an FTIR. Path length limitations were explored by applying different apodization functions and evaluating the effect on resultant spectral data. It was found that longer maximum mirror path lengths resulted

COMPARISON OF FTIR APODIZATION FUNCTIONS USING MODELED AND ...

The problem of the effect of apodization on the retrieval of geophysical parameters from infrared radiances recorded by Fourier transform spectrometers has been analytically and numerically addressed.

OSA | Effect of apodization on the retrieval of ...

Effect of apodization on the retrieval of geophysical parameters from fourier-transform spectrometers. Amato U, De Canditis D, Serio C. The problem of the effect of apodization on the retrieval of geophysical parameters from infrared radiances recorded by Fourier transform spectrometers has been analytically and numerically addressed.

Effect of apodization on the retrieval of geophysical ...

Effects of Apodization The Fourier transform of a damped, finite, periodic signal will generate tails on the peak which vary in intensity based on the damping mode of the transient, and these tails can interfere with low-intensity peaks nearby.

Absorption-Mode Fourier Transform Mass Spectrometry: the ...

Apodization 30 2.5. Phase Effects 36 2.6. Effect of Beam Divergence 41 2.7. Effect of Mirror Misalignment 46 2.8. Effect of a Poor Mirror Drive 49 2.9. Rapid-Scan Interferometers 50 2.10. Step-Scan Interferometers 53 ... ment of spectra: hence the title "Fourier Transform Infrared Spectrometry. ...

Fourier Transform Infrared Spectrometry

The resulting stored data represents the three-dimensional Fourier transform of the object reflectivity density, and hence can be processed by an inverse Fourier transformation.