

# Comparative Evaluation of X-ray Backscattered Energy Spectrum for Subsurface Material Characterization

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X-ray backscattering emerges as a pivotal technique in the realm of subsurface exploration, offering a non-invasive approach to material characterization beneath the soil. This method is significant due to its ability to provide detailed insights into the composition and structure of buried materials without direct physical contact, a feature crucial in fields like geology and environmental science.

Central to this research is the integration of wavelet technology with X-ray backscattered energy spectrum analysis. This synergy enhances the method's effectiveness in delineating the unique spectral signatures of different subsurface materials, such as metals, and ceramics. Wavelet technology, known for its proficiency in signal processing, significantly improves the resolution and accuracy of X-ray backscattering data. It effectively addresses challenges like signal attenuation and noise, enabling a more precise and detailed analysis. Looking forward, the use of X-ray backscattering, augmented by wavelet technology, is set to become a key technique in subsurface material characterization. Its capacity to provide high-resolution data paves the way for breakthroughs in understanding subsurface structures. Looking ahead, the utilization of X-ray backscattering is poised to become a cornerstone in subsurface material characterization, revolutionizing our approach to exploring and interpreting the hidden layers beneath our feet.

## Topics

Session A. Physics of condensed matter and spectroscopy

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