

Gold Standard Technology for **RENAL STONE ANALYSIS**

What is FTIR

Fourier Transform Infrared Spectroscopy (FTIR) is a technique which is used to obtain an infrared spectrum of absorption, emission, photoconductivity or Raman scattering of a solid, liquid or gas. An FTIR spectrometer simultaneously collects high spectral resolution data over a wide spectral range.

FTIR in Kidney Stone Analysis

Cary 630 FTIR instrument screens for more than 1668 transmission spectra of human kidney stones and related chemicals using NICODOM Kidney Stones Analysis software. A relatively good spatial resolution is important as very often the stones are composed of core and various layers of different chemical composition, which is obtained using FTIR technology.

Composition of Kidney Stones

The chemical composition of stones depends on the chemical imbalance in the urine. The five most common types of stones are:



(Calcium Oxalate Monohydrate-Whewellite)
(Calcium Oxalate Dihydrate-Weddellite)



Calcium Phosphate Apatite



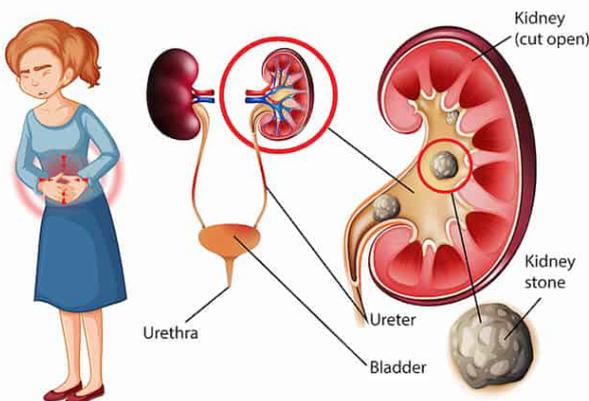
Uric Acid



Cysteine



Struvite



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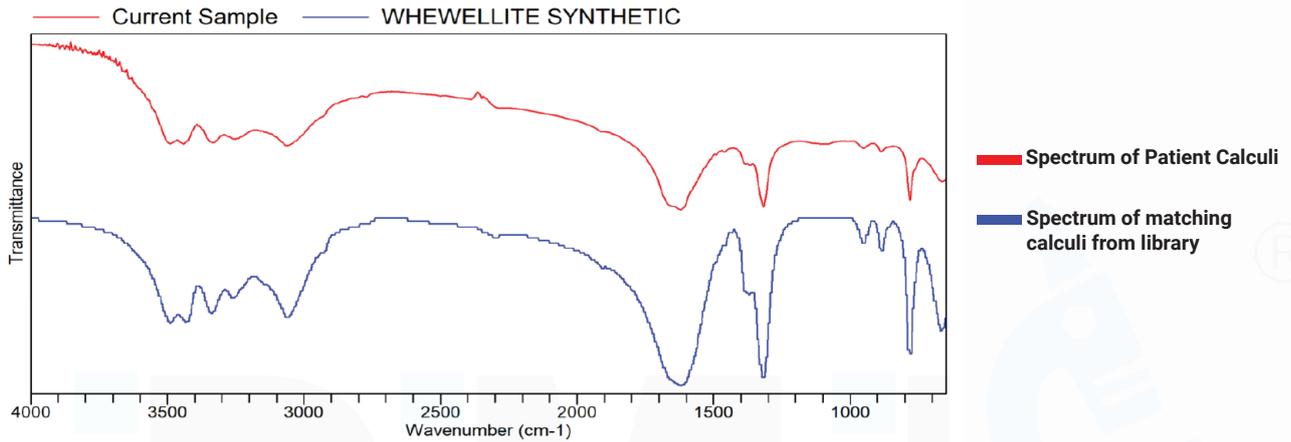
Application in Clinical Diagnostics:

Kidney stones are a mixture of various chemical components crystallised into many different forms. The spectra from FTIR can be searched against a library to accurately identify the stones type, and this then dictates the treatment regime.

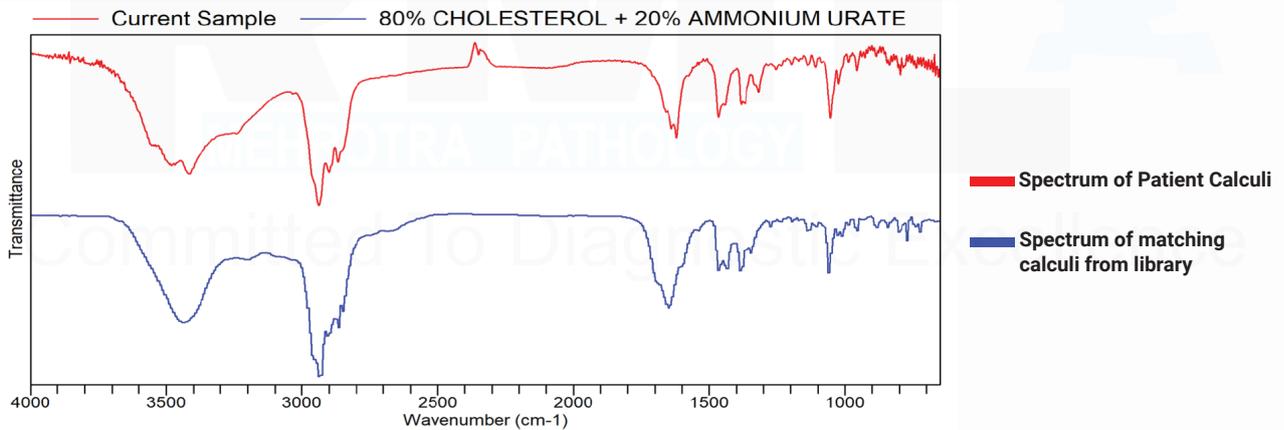
Library

NICODOM IR Kidney Stone Library Contains 1668 transmission spectra of human kidney stones and related chemicals, which is a comprehensive collection of compounds found in human kidney such as different types of oxalates, phosphates, urates, other minerals and their mixture as well as stones of drugs or organic origin. Resolution 4cm⁻¹, transmission spectra (KB pellets.)

WHELLITE SYNTHETIC (Calcium Oxalate Monohydrate)



80% CHOLESTEROL+ 20% AMMONIUM URATE



SODIUM OXALATE (Anhydrous), WHELLITE (hydrated calcium oxalate) and CYSTINE

