

Waters® 2487

Dual λ Absorbance Detector Dual Wavelength Modes

The Waters 2487 Dual λ Absorbance Detector has all the capabilities of a single wavelength tunable UV/Vis detector with the added benefits of a multi-wavelength detector.

FEATURE

2 Wavelengths
MaxPlot
RatioPlot

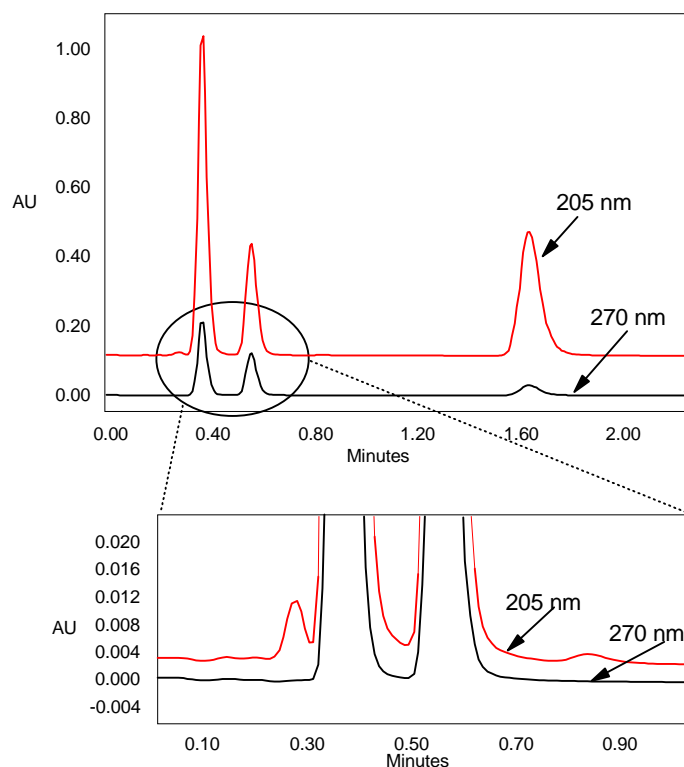
BENEFITS

Selectivity, sensitivity
Sensitivity
Peak homogeneity

These benefits are illustrated in the figures below.

DUAL WAVELENGTH

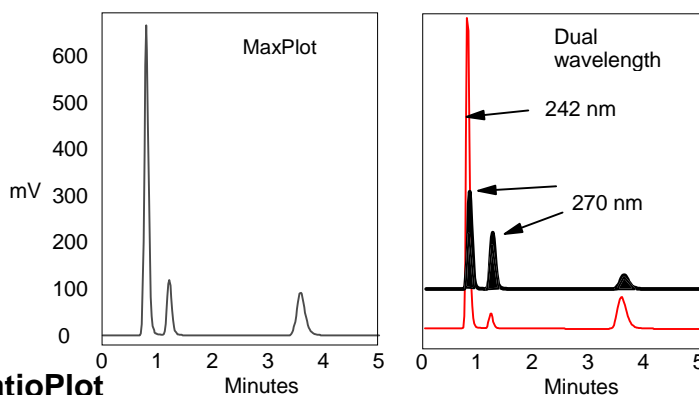
This is the analysis of degradation of an analgesic tablet containing acetaminophen, caffeine and aspirin. At 270 nm (US Pharmacopoeia recommended wavelength) only the analytes are seen. At 205 nm degradation products can be seen. There is greater sensitivity for the small impurity peaks at 205 nm. Dual wavelength allows you to monitor both, simultaneously.



Alliance™ HPLC System
Waters 2690
Waters 2487
Millennium 2010
Symmetry® C18 3.9x50 mm column
Mobile phase: 30% Acetonitrile+
0.1% phosphoric acid
Flow rate: 1 mL/min
Wavelengths: 205 and 270 nm
Sample: Analgesic tablet

MaxPlot

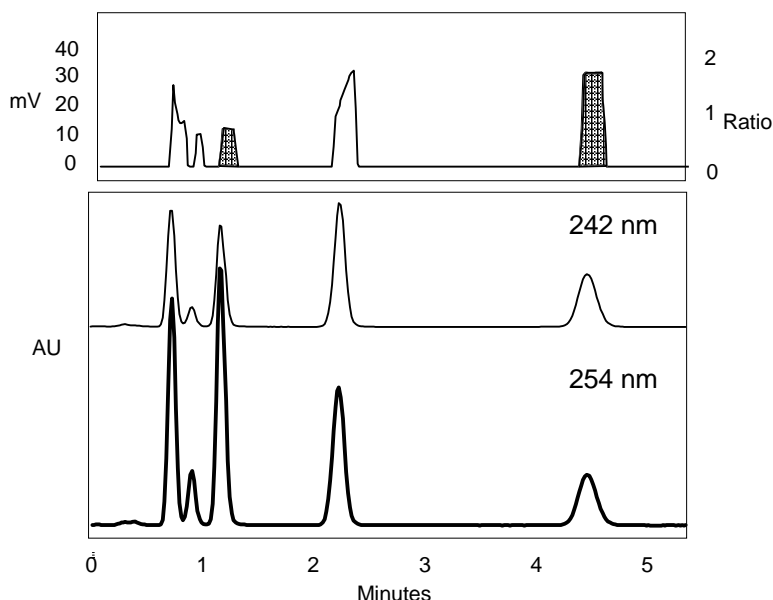
The absorbance spectra of different compounds have different lambda maxima. The greatest absorbance will be obtained at the lambda maximum for each compound. MaxPlot is a dual wavelength feature to maximize sensitivity at two wavelengths in a single chromatogram. The user chooses two wavelengths, one for each channel of the Waters 2487 and sets the output of one channel for MaxPlot. As the detector monitors a chromatogram, the highest absorbance from either wavelength is outputted as MaxPlot. The figure below illustrates this feature. The MaxPlot is more sensitive than either 242 or 270 nm for detecting all three analytes.



Alliance™ HPLC System
Waters 2690
Waters 2487
Millennium 2010
Symmetry® C18 3.9x50 mm column
Mobile phase: 30% Acetonitrile+
0.1% phosphoric acid
Flow rate: 1 mL/min
Wavelengths: 242 and 270 nm
Sample: Analgesic tablet

RatioPlot

The Waters 2487 Dual λ Absorbance Detector can plot the ratio of two wavelengths that are chosen by the user on channels A and B. The two wavelengths are two points on the compounds' spectra. When the RatioPlot is flat at the top, the ratio of the two absorbances is constant. This constant ratio suggests peak homogeneity.



Alliance™ HPLC System
Waters 2690
Waters 2487
Millennium 2010
Symmetry® C18 3.9x50 mm column
Mobile phase: 30% Acetonitrile+
0.1% phosphoric acid
Flow rate: 2 mL/min
Wavelengths: 242 and 254 nm
Sample: Mixture of standards

The Waters 2487 absorbance detector is the most sensitive UV/Vis detector available today. In the dual wavelength modes, it has more capability than a single wavelength detector for increasing sensitivity with MaxPlot and qualitative information from RatioPlot. However, for maximum spectral information from an absorbance detector, the Waters® 996 Photodiode Array Detector is the recommended choice.