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PHARM021: Rapid Identification of Polymorphs of Pharmaceuticals by Raman Spectroscopy

Introduction

In pharmaceutical manufacturing, quality problems caused by differences in crystal polymorphs can lead to product recalls or even process revisions. In the quality control department, verification of polymorphism of intermediate and final products is important for quality control. Conventional portable Raman spectroscopy can be difficult to identify polymorphs due to fluorescence noise, but the 1064 nm excitation light can clearly identify minute structural differences. Here we introduce an example of polymorph identification of ranitidine hydrochloride.

Chemical fingerprinting

Analysis:	Pharmaceutical additives
Use:	Formulation /Manufacturing (Raw materials)
Analyzed materials:	Ranitidine hydrochloride

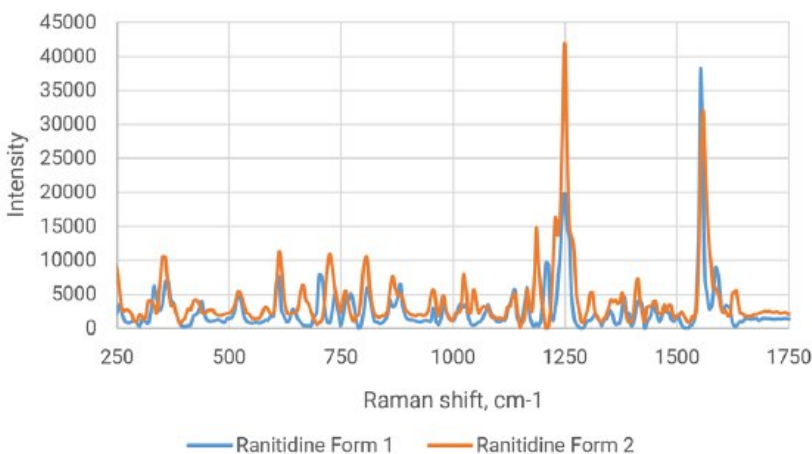


Figure 1: Comparison of spectra of ranitidine Form I and Form II

Conclusion

As shown in Figure 1, Form I and Form II of ranitidine hydrochloride, polymorphs that have different structures, show clear differences in several peaks, such as 1250 cm^{-1} , 1550 cm^{-1} , etc. 1064 nm excitation Raman suppresses the effect of fluorescence. The 1064 nm excitation Raman can suppress the effect of fluorescence and detect these fine structural differences, thus improving the reliability of polymorph identification. Raman spectroscopy allows for efficient polymorph verification of intermediate and final products, as results can be obtained in only a few tens of seconds, without any pre-processing such as sampling.

Related products



Progeny

Handheld Raman for raw material identification and finished product authentication using 1064 nm Raman analysis.