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# PHARM022: Use of Raman Spectroscopy in Monitoring Mixing Ratios During the Manufacturing Process

## Introduction

In the manufacturing process, variations in raw material mixing ratios, poor dispersion, and unintended side reactions often lead to poor product quality and lot defects. Conventionally, the process has relied on spot checks and laboratory analysis, leaving the risk of missing the above or delaying the process. To address these issues, a portable Raman spectrometer enables non-destructive, real-time, continuous monitoring of in-process mixtures, contributing to the prevention of product defects and process stabilization.

## Chemical fingerprinting

<b>Analysis:</b>	Organic solvent
<b>Use:</b>	Formulation /Manufacturing (Raw materials)
<b>Analyzed materials:</b>	Ethyl alcohol and glycerol

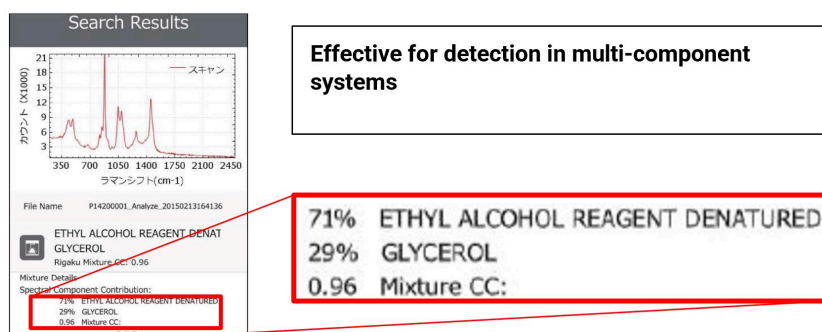


Figure 1: Mixing ratio of ethyl alcohol and glycerol

## Conclusion

As shown in Figure 1, Rigaku Mixture, which is a program in the Progeny, mounted on our portable Raman spectrometer enables rapid visualization and quantitative evaluation of the content ratio of each component (71% and 21%) for a mixture of ethyl alcohol and glycerol. In the past, discrepancies in mixing ratios were overlooked, leading to the risk of re-

inspection or disposal of entire product lots. This technology enables non-destructive, real-time composition confirmation, contributing to early detection of mixing errors, stabilization of manufacturing processes, and reduction of quality costs.

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## Related products



### Progeny

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