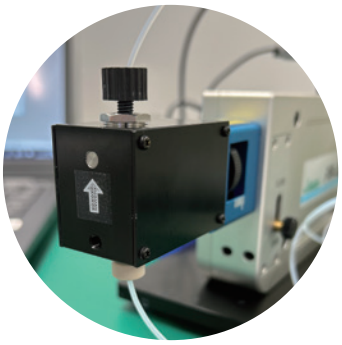
JASCO ENGINEERING

PR-1-FC（E）

Quartz flow cell　for Palmtop Raman spectrometer



Quartz flow cell [PR-1-FC(E)]

The quartz flow cell PR-1-FC is designed to be attached to the laser emission port of the Palmtop Raman spectrometer PR-1w. Connecting it with 1/16-inch tubing and connectors, it enables spectral measurement in flow conditions and interval measurements.
This system is expected to be useful for applications such as monitoring product formation during flow synthesis and tracking the progress of reactions inside a reaction vessel.

Features

- Quartz flow cell for measuring liquid samples
- Structurally optimized to maximize the measurement sensitivity of the PR-1w
- Designed to be compatible with reaction systems under back pressure（up to 0.7 MPa）

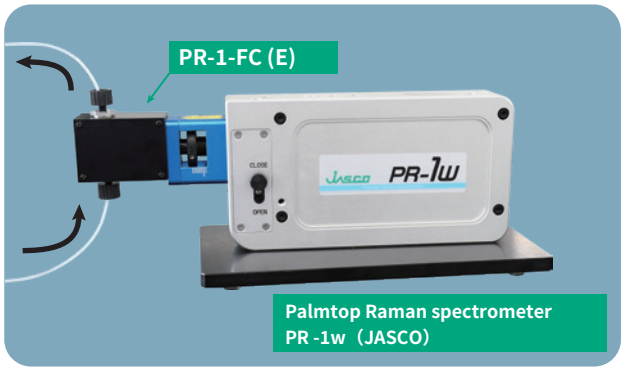
【Materials of wetted parts】
- SUS-316
- Teflon
- Quatz

※ The flow cell section is not visible on actual product.

Specifications

Cell path length ：5 mm
Cell volume ：180 µL
Applicable flow rate range：up to 30 mL/min
Tubing size ：1/16” *

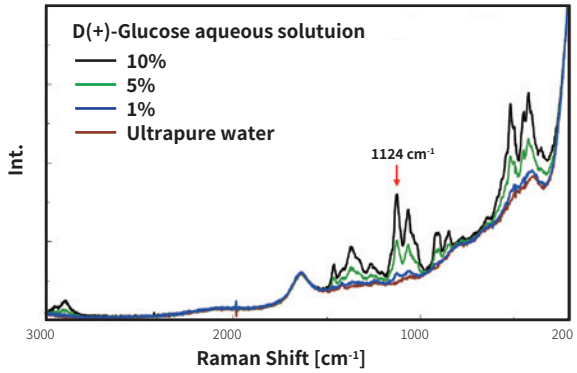
* Tubing fittings are not included and must be provided separately.



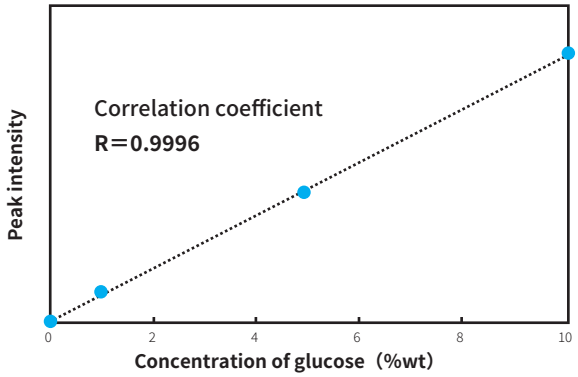
Analytical sensitivity and calibration curve

(Instrument：PR-1w)

Since quartz is used in the measurement section, the influence on the background is minimal, allowing for high-quality spectra to be obtained. Additionally, calibration curves with high correlation coefficients can be achieved.



Raman spectra of glucose solution



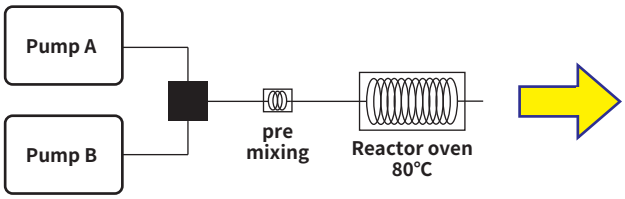
Calibration curve of glucose solution

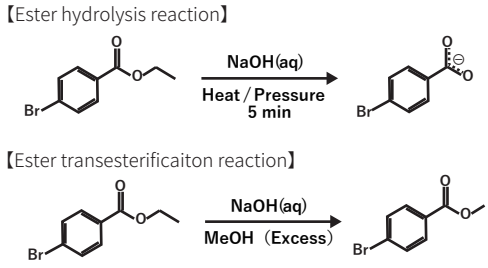
Reaction monitoring in flow system

(Ester hydrolysis and transesterification reaction)

Here is an example of monitoring the hydrolysis and ester exchange reactions occurring when sodium hydroxide is added to a methanolic aqueous solution of ethyl 4-bromobenzoate, using the PR-1w and PR-1-FC.

Pump A：200 mM Ethyl 4-bromobenzoate（water：methanol＝1：9）
Pump B：500 mM NaOH solution

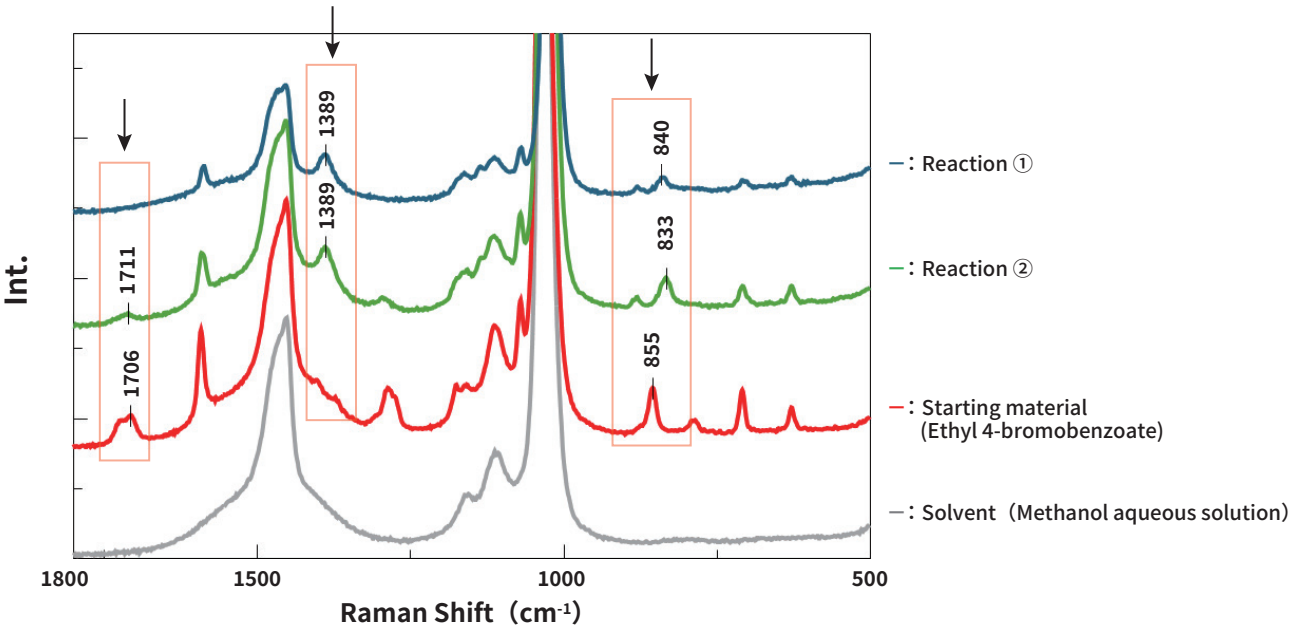




【Raman spectral data】

Reaction ①：Pump A：Pump B＝0.25 mL/min：0.25 mL/min
Reaction ②：Pump A：Pump B＝0.4 mL/min：0.1 mL/min

A characteristic peak of the carboxylate anion was detected at 1389 cm^{-1} in both reactions.
⇒ The hydrolysis reaction was ovserved.
In Reaction 2, characteristic peaks of methyl 4-bromobenzoate were observed at 833 cm^{-1} and 1711 cm^{-1}.
⇒ Ester transesterification reaction was simultaneously monitored.



Raman spectra of the solvent, starting material, reaction products

ISO-9001
ISO-14001
CERTIFIED

Products described herein are designed and manufactured by ISO-9001 and ISO-14001 certified JASCO Corporation

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