Is your process suitable for Raman spectroscopy today?

A short self-qualification to assess whether Raman spectroscopy can support earlier, safer and more transparent operational decisions in your chemical process

Before starting a Raman spectroscopy project, it is worth checking whether your process conditions and decision challenges can actually benefit from earlier chemical insight and improved process transparency.

This short checklist reflects how experienced plants assess whether Raman spectroscopy can support real operational decisions—such as reaction control, process optimization, energy efficiency, handling difficult or unsafe sampling points, or understanding why a process is hard to reproduce—rather than simply generating additional data.

How to use this checklist

This checklist does not determine whether Raman can work in principle.

It helps assess whether earlier chemical insight would lead to different decisions in your specific process context, considering phase behavior, mixing quality, and organizational readiness.

Answer each question with a simple Yes or No.

Operational checklist	Yes	No
Do you have the sense that your production could be improved, but you aren't sure how to make that happen?	☐	☐
Would earlier insight into the process allow you to intervene before quality, yield, energy, or stability issues occur? (e.g., feed adjustment, endpoint timing, transition stabilization)	☐	☐
Do you experience batch-to-batch variability or "it worked once" runs where you don't know what changed—or what lever would make it reproducible?	☐	☐
Is improving process performance a current priority for your site (automation, reaction optimization, throughput, or energy efficiency)?	☐	☐
Are there steps in your process where sampling is difficult, slow, or unsafe? (e.g., high temperature/pressure, hazardous materials, short-lived intermediates)	☐	☐
Would live, in-process information help operators or engineers better understand what is happening during the run? (e.g., reaction progress, composition drift, unexpected kinetics)	☐	☐
If a reliable process trend indicated a deviation, would you be able to act on it during the run, manually or via automation? (e.g., adjust feed, temperature profile, residence time, or stop escalation early)	☐	☐
Would a faster in-process indicator be valuable, even if it does not fully replace a laboratory method?	☐	☐
Do your teams already rely on process trends (e.g., GC, gravimetric data, temperature, heat release) for decisions, even when absolute accuracy is limited?	☐	☐

Note: Answers should reflect a specific process, phase (gas, liquid, slurry), and reactor configuration. Raman suitability varies with mixing, optical access, and the ability to act on information—not just with chemistry.

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How to interpret your score

6–9 Yes – Your process is well-suited for using Raman spectroscopy to support earlier, more confident operational decisions.

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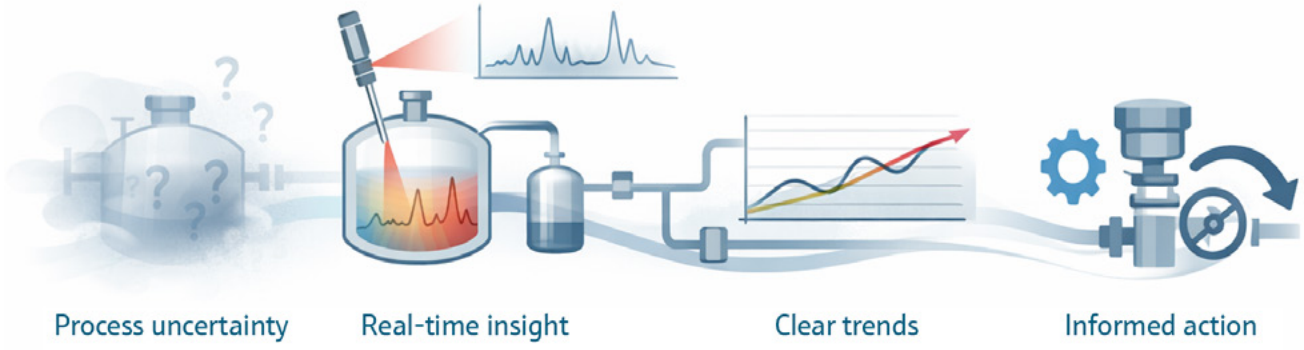
3–5 Yes – Potential value, but success depends on selecting a focused use case and realistic expectations.

0–2 Yes – Limited benefit today. Delaying adoption or starting at lab/pilot scale may be the better choice.



From process uncertainty to earlier operational decisions

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