

# Press Release

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## **Unified Chromatography – Shimadzu European Innovation Center The Swiss Knife of analytics**

***Nexera UC: the next era of supercritical fluid extraction and chromatography /  
Combination of SFC and LC separation technologies with MS/MS detection /  
SFE-SFC-MS platform for quick and easy on-line sample extraction***

Within the scope of the European Innovation Center, the Nexera UC system fulfils measurement requirements of a wide range of applications, such as monitoring of pesticides in food products, investigation of biomarkers, determination of additives in polymers, drug discovery, environmental controls and cleaning validation, to name just a few. The Nexera UC SFE-SFC-MS platform combines quick and easy on-line sample extraction with state-of-the-art chromatographic separation and high sensitivity detection. For the first time ever, it showcases complete automation of SFE sample pre-treatment and analysis by liquid or supercritical fluid chromatography.

### **Increasing speed and efficiency while reducing the risk of human error in the analytical workflow**

The *Nexera UC* online SFE-SFC approach eliminates the need for tedious, manual sample pretreatment. All samples are extracted under light-shielding, anaerobic conditions, enabling highly reproducible analysis even of unstable compounds that are easily oxidized or degraded using a conventional liquid extraction method. Notably, analysis of pesticides in food products with the state-of-the-art *Nexera UC* system and sample preparation in the SFE unit takes just a fraction of the time required when e.g. using a traditional QuEChERS method. Furthermore, the fully automated *Nexera UC* system offers much higher recovery rates of target analytes while significantly reducing the risk of human error during sample pretreatment.

### ***Nexera UC* system highlights**

1. Unique unified and fully automated system combining supercritical fluid extraction (SFE) with supercritical fluid (SFC) or liquid chromatography (LC)
2. Industry-leading sample throughput for supercritical fluid extraction, enabling up to 48 samples to be continuously and automatically processed
3. Achieves the highest levels of sensitivity due to split-less injection of the entire volume of eluent into the mass spectrometer

### Technological background

The innovative *Nexera UC* system offers a supplementary chromatographic technique to conventional LC and GC analysis that enables separation of an even wider range of non- to very polar analytes. Automated extraction and chromatography is achieved using a mobile phase of supercritical carbon dioxide which exhibits the solubility of a liquid with the diffusivity of a gas. Solvent strength can be increased by adding a polar co-solvent. SFE and SFC are therefore faster, more efficient, cheaper and more environmentally friendly than other methods using large amounts of toxic organic solvents.

The *Nexera UC* system was developed in collaboration between Shimadzu Corporation, Osaka University, Kobe University and Miyazaki Agricultural Research Institute, which is funded by the Japan Science and Technology Agency (JST) – a partnership comparable to the concept of the European Innovation Center.



**Figure 1:** *Nexera UC* Unified Chromatography system provides a universal solution for a wide range of applications

Web link: [www.shimadzu.eu/nexera-uc](http://www.shimadzu.eu/nexera-uc)



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