Justification
TECHNICAL REASONS / EXCLUSIVE RIGHT

Subject	Reasons for the single-source contract award regarding a cryogenic ion trap mass spectrometer for infrared laser spectroscopy for HFML-FELIX

1 Reason for the procurement requirement

The HFML-FELIX institute houses an international user facility hosting a series of infrared free-electron lasers (FELs) that are available for experiments to both local and visiting (inter)national scientists. The lasers cover the infrared region from 2.8 – 150 μm with macropulse energies > 100 mJ (10 μs pulses @ 10 Hz). A major application of the FELs involves infrared ion spectroscopy, where vibrational spectra are obtained for the ionized molecules inside a mass spectrometer with the aim to elucidate their chemical structure. For this purpose, a high-resolution and high-sensitivity cryogenic ion trap mass spectrometer (MS) is required that will meet the diverse requirements of high sensitivity in analytical applications, high resolution in MS analysis, ion storage at cryogenic temperature leading to high spectral resolution in the IR spectra, and optical access to the ions in the cryogenic trap by the high pulse energies of the FELs.

To allow for easy user operation and versatility, the cryotrap system must meet the following mandatory performance requirements, including the more detailed specifications given in the Appendix.

1. A new or fully refurbished computer-controlled high-resolution (>10 000 at m/z 400) cryogenic ion trap mass spectrometer (hereafter "cryoMS") with robust electrospray ionization source allowing versatile positive and negative ion detection with minimal adjustment and maintenance.
2. Accurate mass-determination possible in all MS modes over a wide mass range (m/z 50 – 10000)
3. Collision-induced dissociation MS/MS operation must be possible.
4. The instrument must have an onboard ion mobility separation (IMS) stage.
5. The instrument must have a neutral / ion separation stage before mass-selection.
6. Changing between different atmospheric pressure ionization sources (ESI, APCI) without the need to break the vacuum must be possible.
7. The instrument must be adaptable for the use of other ionization sources.
8. The instrument must be compatible with a commercially available (U)HPLC chromatographic separation platform. Software integration between MS and LC must be possible.
9. The ion storage device must be mounted on a two-stage helium cryocooler that reaches 4 K and must be able to store ions for a duration of several seconds.

10. The ions in the cryogenic storage device must be accessible for a high intensity infrared laser beam. Software integration and synchronization between the laser control and the MS must be possible.

2 Scope of the assignment

- Assembly of the cryoMS on Contractor's premises in accordance with Programme of Requirements and Tender.
- Delivery and installation of the system at HFML-FELIX in collaboration with HFML-FELIX.
- Site assessment tests (SAT) and verification of the technical specifications mentioned in the contract, in collaboration with HFML-FELIX after installation at HFML-FELIX.
- Aftercare phase after delivery at HFML-FELIX.
- Advanced training for system maintenance and operation for up to three key users. Up to two follow-up user-training or troubleshooting visits within 12 months after installation.
- 1-year warranty on the system and its parts.
- Other possible items for delivering the system in working order.
- Company needs to have substantial and demonstrable experience in the field over multiple years, capable of providing reliable and responsive service, supported by a team of at least 10 service engineers.

3 Estimated contract value

The contract value for the purchase is: €700,000 excluding VAT.

This budget includes all costs, such as installation and implementation, guarantees, training and documentation, any additional costs for travelling, accommodation and testing. It should also include delivery in accordance with DDP (Delivery Duty Paid) as defined in ICC Incoterms 2000.

4 Market

A market survey has been carried out for high resolution and high sensitivity ion trap mass spectrometers combined with cryogenic ion trapping capabilities, fulfilling the specific requirements described in Section 2 and in the Appendix.

This market assessment showed that several suppliers can provide high resolution and high sensitivity ion trap mass spectrometers. However, the complete combination of requirements, most importantly the incorporation of a cryogenic ion trap and optical laser access, which is essential for the operation in combination with the FELs and to achieve the desired high spectral resolution compared to room temperature devices, is only met by the Cryo-Photo-Synapt system provided by MS Vision. MS Vision has already delivered a similar device, a modification and upgrade of a Waters Synapt system with a cryo trap and cooler, for academic usage, and will develop in collaboration with HFML-FELIX a version operating at even lower temperatures, based on their previous experience. No other commercial cryogenic ion trap mass spectrometers are on the market.

5 Procurement procedure and

The contract is awarded by private treaty with reference to Article 2.32(1)(b) of the the Public Procurement Act 2012. This article stipulates that the contract may be awarded by private treaty if the contract can only be performed by one specific contractor,

a) because competition is lacking for technical reasons, or
b) because exclusive rights, including intellectual property rights, must be protected and there is no reasonable alternative or substitute.

In this case, it concerns a) Competition is lacking for technical reasons:

- There is no other commercial supplier for the combination of a high resolution, high sensitivity mass spectrometer with cryogenic ion trap capabilities.

There are no other market parties known that can provide what is requested (see paragraph 5) and there is also no reasonable alternative or substitute, as outlined in paragraph 5.

For this reason, the contract will be awarded by private treaty to MSVision.

Publication of awarded contract
In accordance with Article 2.37(e) of the Aw 2012, the contract awarded will be announced on TenderNed.