1. Information for the European Market consultation "Microscale Thermophoresis system"

1.1 Market Consultation

This is the market consultation for a microscale thermophoresis system.
Please note that this is a market consultation and not an invitation for a Tender.
The University of Twente wants to start a market research before proceeding to tender.
The market consultation document is available from 16 april 2013. The deadline to respond is 1 may 2013 17:00.Through the mail (r.gerritsen@utwente.nl) you can ask questions related to this document.

1.2 Client: University of Twente

The University Of Twente (UT) is an entrepreneurial research university founded in 1961. The UT provides teaching and research in scientific fields ranging from public administration, science and applied physics to biomedical technology. The UT is the only Dutch university to possess a campus: study, work, accommodation, entrepreneurship and relaxation are for the most part concentrated in one place, on the Drienerlo estate. This campus also acts as a tool for the academic and personal development of students, and for promoting a sense of entrepreneurship. The site is owned by the UT and covers around 150 ha, the buildings occupying some 200,000 m². The UT currently has around 8,500 students and around 3,000 staff, with an average of two thousand students living on the campus. The UT aims to grow to 10,000 students within 5 years.

The UT comprises the following six faculties and nine services:

Faculties

- CTW Engineering Technology
- TNW Applied Physics
- GW Behavioural Sciences
- EWI Electrical Engineering, Mathematics and Computer Science
- MB Management & Governance
- ITC International Institute of Geo-Information Sciences and Earth Observation

Services

- ICTS ICT Service Centre
- MC Directorate for Marketing & Communication
- SB Directorate for Strategy & Policy
- AZ General Affairs
- HR Human Resources Directorate
- FEZ Directorate for Financial and Economic Affairs
- FB Facility Department
- OSC Student and Education Service Centre
- BA Library and Archive Service Centre

We recommend that you visit our website www.utwente.nl to gain a good picture of the scope and complexity of the site and buildings.

MESA+ Institute for Nanotechnology
MESA+ is one of the largest nanotechnology research institutes in the world, delivering competitive and successful high quality research.
It uses a unique structure, which unites scientific disciplines, and builds fruitful international cooperation to excel in science and education.
MESA+ has created a perfect habitat for start-ups in the micro- and nano-industry to establish and to mature.

MESA+, Institute for Nanotechnology, is part of the University of Twente, having intensive cooperation with various research groups within the University.
The institute employs 500 people of which 275 are PhD's or postdocs. With its NanoLab facilities the institute holds 1250 m2 of cleanroom space, 150 m2 BioNanoLab and state of the art research equipment.
MESA+ has an integral turnover of 45 million euro per year of which 60% is acquired in competition from external sources.

The structure within MESA+ supports and facilitates the researchers and stimulates cooperation actively. MESA+ combines the disciplines of physics, electrical engineering, chemistry and mathematics.
Internationally appealing research is achieved through this multidisciplinary approach. It is strengthening its international academic and industrial network by fruitful cooperation programs.

MESA+ has been the breeding place for more than 40 high-tech start-ups to date. A targeted program for cooperation with small and medium-sized enterprises is specially set up for start-ups.
MESA+ offers the use of its extensive facilities and cleanroom space under friendly conditions. Start-ups and MESA+ work intensively together to promote transfer of knowledge.

Motivation of the Investment
The MESA+ Institute for Nanotechnology will invest in a new microscale thermophoresis system that will add new capabilities to the NanoLab, and specifically to the BioNanoLab. Within MESA+ institute, the new microscale thermophoresis system will be used in a multi-user environment (researchers, students and industrial partners) for a range of applications, as specified below. Therefore, robustness, user-friendliness, flexibility and applicability range are important factors besides accurateness and reproducibility of the experimentation results.

Mandatory requirements for a Microscale Thermophoresis system

All the following requirements **must** be fulfilled:

- Microscale thermophoresis system for interaction assays based on thermophoretic movement and fluorescence emission detection of a fluorescently labeled reaction partner
- For determination of (bio)molecular interaction characteristics with **high accuracy and sensitivity**

- For **real-time** measurements **in solution, without immobilization** of one of the reaction partners
    - in buffer and in complex bio-liquids, like blood serum and cell lysate preparations

- Based on detection of commonly used fluorescent dyes such as FITC, GFP mutants, Cy dyes, Alexa Fluor dyes

- Suitable for the following applications:
    - **Rapid insight (max. 15 min.)** into typical (bio)molecule interaction values including binding affinities, stoichiometry's and binding energetics
    - Study of multicomponent reactions, complex formation, order of assembly
    - Study of membrane bound proteins directly in liposomes and vesicles

- Required sensitivity and detection ranges:
    - Range of dissociation constants (K_D): **sub-nM to mM**
    - Molecular mass range: **<100Da until MDa**

- Possibility to measure at **different temperatures ranging between 20-45 ˚C.**

- Flexibility to **process automatically at least 15 samples in one run**

- Sample requirements:
    - Easy and quick (few minutes) sample preparation
    - Small sample volumes, <10 µl, required per sample at nM concentrations

- Low-cost consumables and reagents

- Dedicated software for data acquisition and analysis

- Notebook or PC for operation and control