AUTOMATED MICROFLUIDICS SYSTEM FOR NANOPARTICLE PRODUCTION

(mod. SUNSHINE LITE)

VENDOR: ALFATEST

YEAR OF ACQUISITION: 2025

SUPERVISING FACULTY MEMBER: Prof. Fabio Sonvico

Technical features:

- Allows the synthesis of liposomes, lipid and/or polymeric nanoparticles of different sizes, from 40 to 800 nm, and PDI lower than 0.2.
- 4 independent syringe pumping lines, controlled by a single software.
- Total flow rates from 100 µL/min to 20 mL/min (chip-dependent), and flow ratios from 1:1 to 10:1.
- Automated sample management.
- Automatic production of up to 10 nanoparticle preparations with as many different flow conditions (total flow and flow ratios).
- Continuous nanoparticle production through microfluidics, reaching total flow rates of up to 24 liters per day.
- Ability to produce volumes as low as 400 microliters up to 24 liters/day, without modifying the preparation microfluidics.
- Reusable and washable microchips, made of ultra-flat glass and available in 4 different types.
- Effective washing protocols between one preparation and the next.
- Automatic fraction collector.

Applications:

Production of liposomes, lipid and polymeric nanoparticles for drug delivery.

Acquired for the Department of Excellence MUR 2023-2027