



## **AUTOMATED MICROFLUIDICS SYSTEM FOR NANOPARTICLE PRODUCTION**

**(mod. SUNSHINE LITE)**

**VENDOR: ALFATEST**

**YEAR OF ACQUISITION: 2025**

**SCIENTIFIC SUPERVISOR: 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  $\mu\text{L}/\text{min}$  to 20  $\text{mL}/\text{min}$  (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***