

High-resolution electron beam lithography system



Technical description:

The Class 100 clean room houses the **electron lithography unit** (Raith eLine+). The system consists of an electron gun, a secondary electron detector, an in-lens detector, a laser interferometer, control electronics, and a pump system to maintain adequate vacuum in the device. The system is capable of irradiating elements ranging in size from 10 nm to several hundred μm on a sample surface of up to 4 inches.

In addition, the room includes a **process table** (Arias) for applying, baking and removing the resist. In the table, we have positioned a heating plate, an ultrasonic cleaner, a centrifuge, a nitrogen gun, and a distilled water gun for washing samples. Necessary utilities such as water, gas, and an extractor are located in the tabletop, which continuously discharges chemical vapors.

Electron lithography is performed using **AR-P 617** series positive resist, while negative lithography is based on **AR-N 7520** series resist.

Trade name: eLINE Plus Basic - SN.: 1-212-233

More details: </equipment/system-do-wysokorozdzielczej-litografii-elektronow/>

Access type: External

Type of accreditation / certificate: Not applicable

Contact person: Jurzecka-Szymacha Maria

Contact person url: <https://skos.agh.edu.pl/osoba/maria-jurzecka-szymacha-7600.html>

Responsible body: Academic Centre for Materials and Nanotechnology

Group / laboratory / team: Department of Quantum Effects in Nanostructures

Last update date: March 10, 2025, 1:36 p.m.

Year of commissioning: 2013

IDUB research areas:

(PRA 7) Design, production, and testing of modern materials and the technologies of the future based on a multidisciplinary approach combining materials engineering with chemistry, physics, mathematics, and medicine

Research capabilities:

Users are able to perform accurate nanostructuring at the described resolution. The entire process takes place in a clean room, which benefits the quality of the samples obtained. Combined with the close proximity of the pulsed laser ablation laboratory, it is possible to obtain complete interfaces with the potential for application in scientific fields such as spintronics.

Conditions for providing infrastructure:

Equipment is available in accordance with the Regulations for the Use of ACMiN's Research Infrastructure. (https://acmin.agh.edu.pl/home/acmin/5_Wspolpraca/Aparatura/Zasady_i_koszty_korzystania_z_infrastruktury_badawczej_ACMiN.pdf)