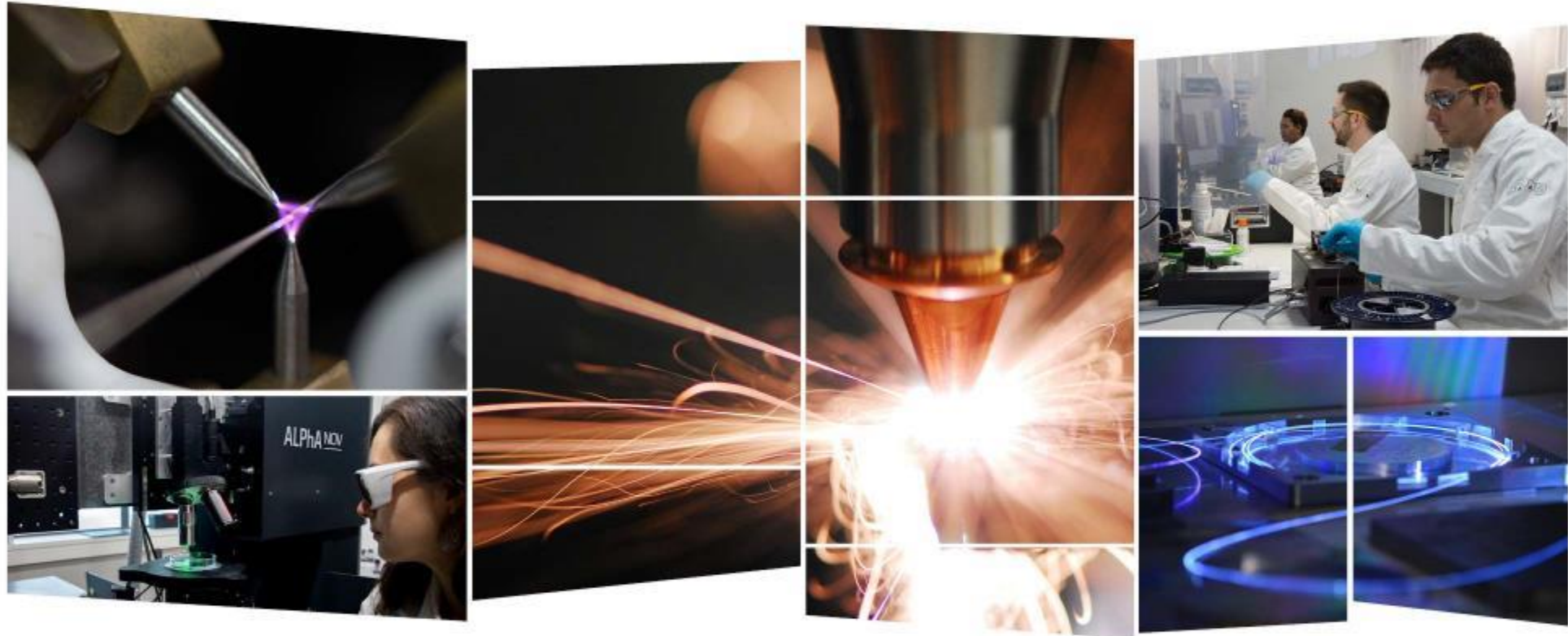


ALPhA NOV

Optics & Lasers Technology Center



Opportunités pour le laser dans la fabrication de batteries innovantes

Girolamo Mincuzzi



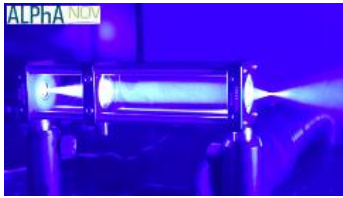
Some applications for Battery

Soldering of Cu, Al, hybrid

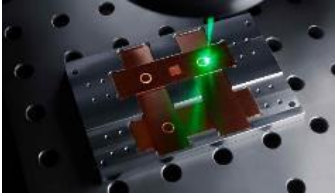
Up to 10kW, IR Laser



200W, CW Blue Laser



1 kW, CW Green Laser

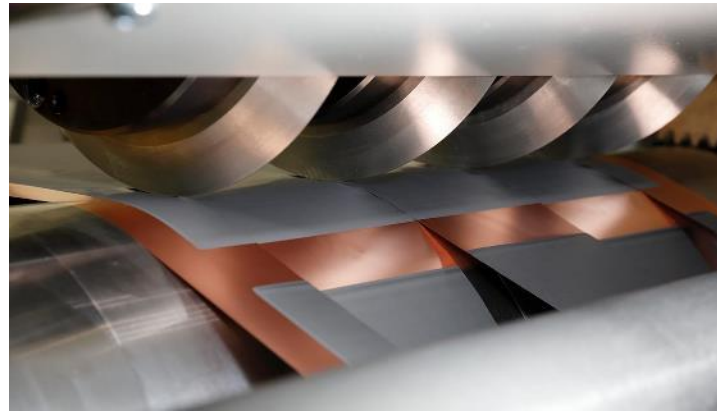


High Power Sources for High Throughput
Different wavelengths for different materials

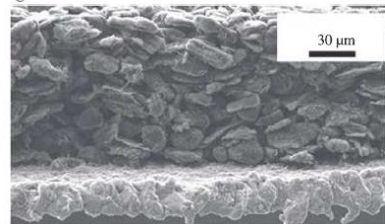


Cutting of Electrodes

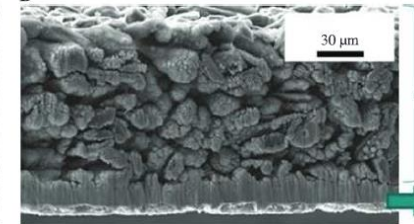
High Power pulsed laser ns and fs
(IR, Green, UV)



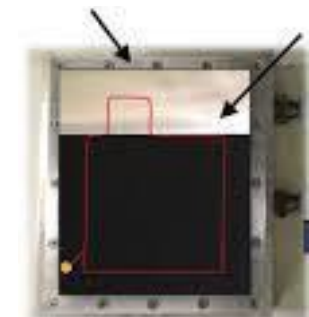
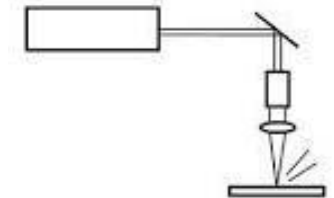
ns



fs



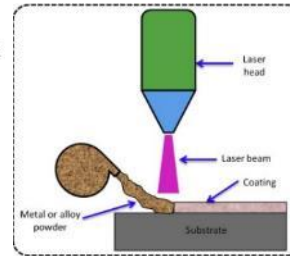
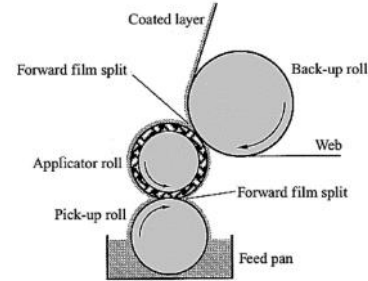
Structuring of Electrodes



New Horizon Europe project



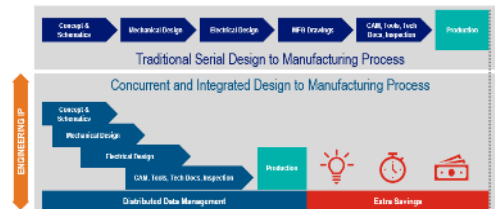
Get rid of NMP (Gen 3+),
develop new solvents and new materials which are compatible
(binders, anode and cathode composition)



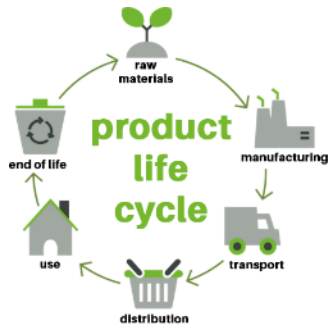
New Coating and Fabrication Process,
Suitable for new materials



UNION EUROPEENNE

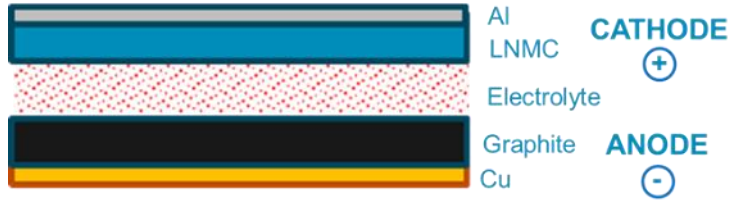


Follow a Design to Manufacture Approach,
Increase the digitalisation of processes



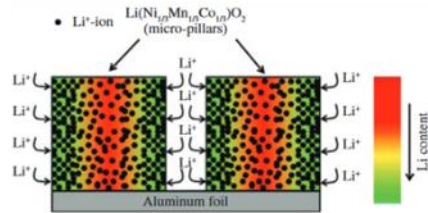
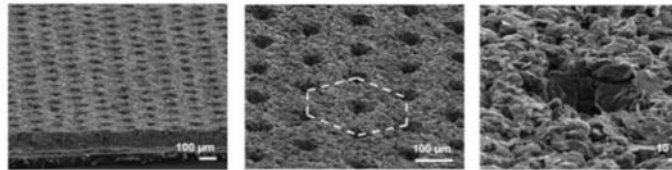
Technology assessments
LCA, circularity, safety

Laser processing

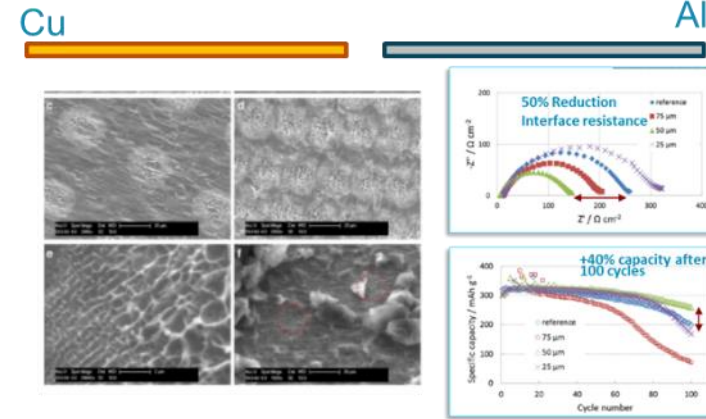


Graphite

LNMC



1 Texturing of charge collectors to improve the adhesion and reduce the interface resistance



2 Structuring of Electrodes to Increase Ionic Exchanges Rate
Compensate thermal Expansion

Advanced materials and cells development enabling large-scale production of Gen4 solid-state batteries for mobility applications (Batt4EU Partnership)

- Innovation Action (60 % funding) : HORIZON-CL5-2023-D2-02-01:
- 8 M€ - 3 projects granted, 05/09/2023