



umicore

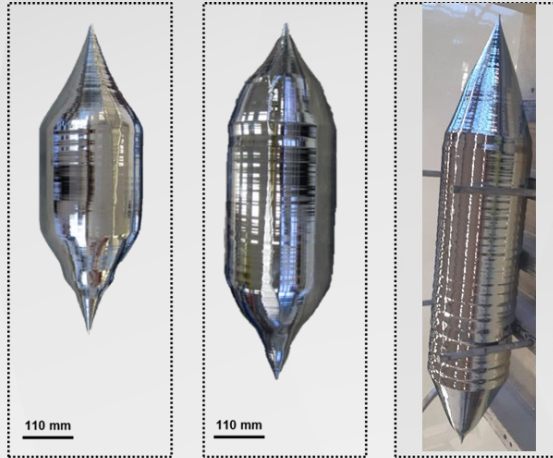
materials for a better life

Towards lower cost space solar cells



200 mm Ge

Pilot line up and running



90 kg

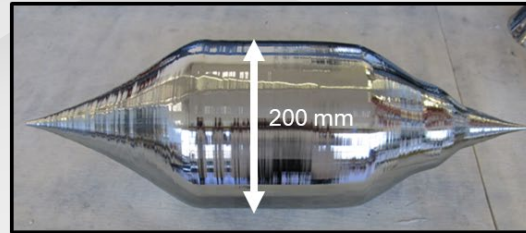
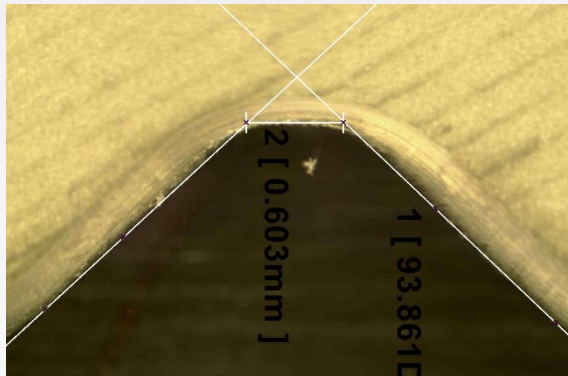
115 kg

160 kg

Status 2019

Status 2020

Status 2021



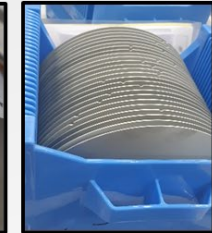
Crystal pulling



Rounding + notch



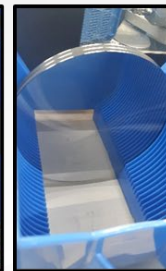
Wiresaw



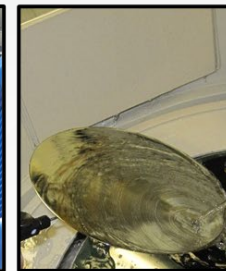
Laser marking



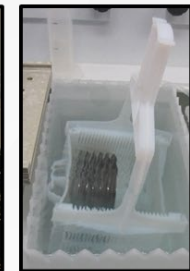
Edge grinding



Surface grinding



Polishing

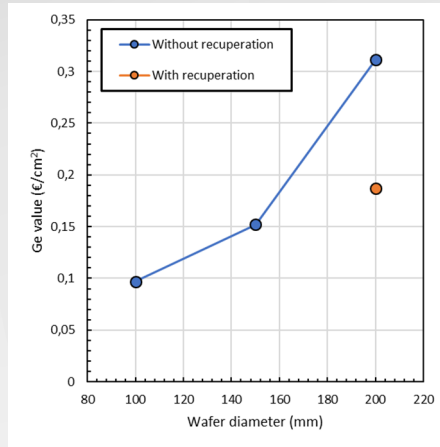


Epi-clean



Ge Recycling

Several recycling plants operational @ customers



High capacity

Several thousands of tons of recycling streams annually.



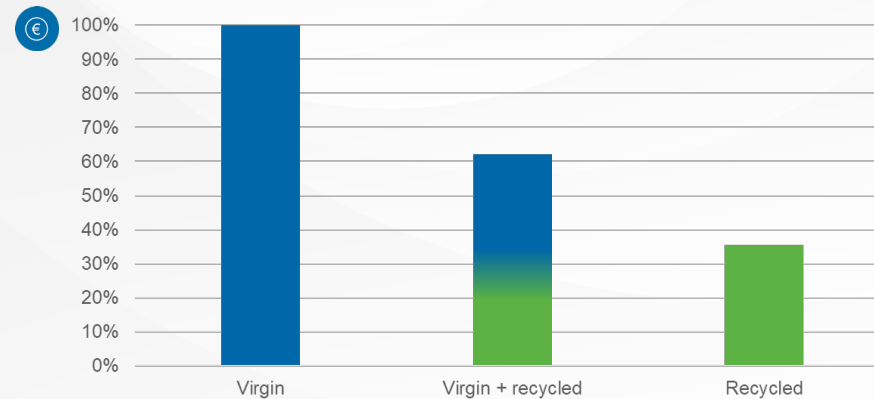
Extensive capabilities

Pyro and hydro metallurgy for complex streams with e.g. silicon and fluorine.



Efficient processes

Germanium can be recovered from streams with Ge content of 0.5 % for solids and 0.5 g/l for liquids.



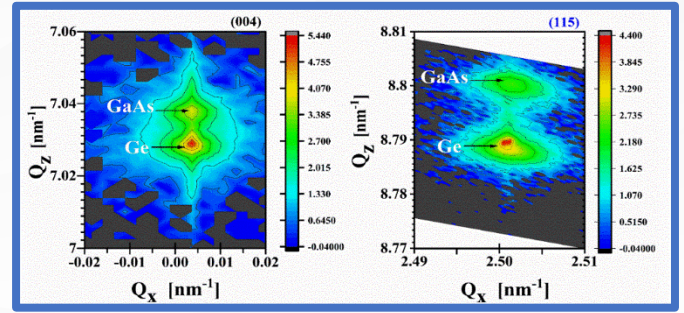
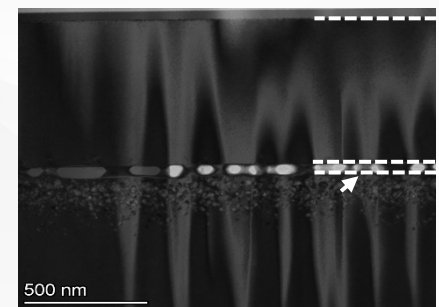
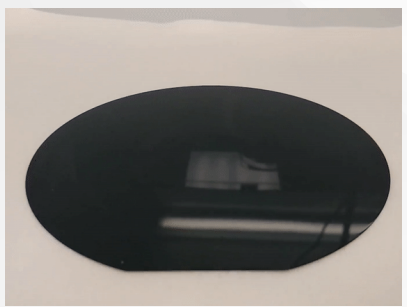
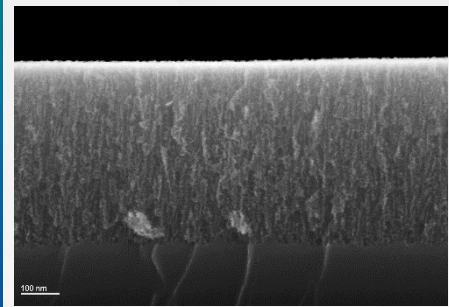
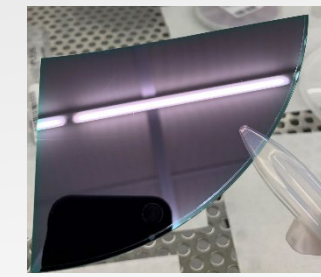
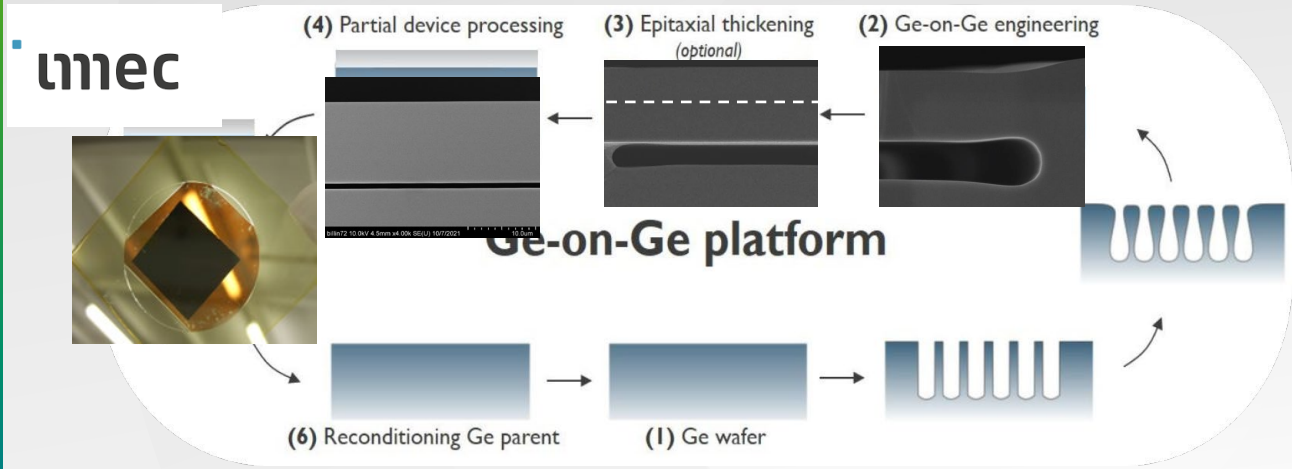
Work partially funded under EU H2020 project 776362 "Radhard"

Work partially funded under ESA project 4000128156 "Effective use of Ge"



Engineered Ge Substrates

Project moving to industrialisation phase



Work partially funded by ESA contract 4000129924 and NSERC – Innovéé project CRDPJ 537960 - 18



Connecting Life

