



(For Europe) Impossible is nothing
Krzysztof Fic, Poznan University of Technology

**IGLO Open on the Polish Presidency:
programme and R&I priorities**

22 January 2025, Brussels, Belgium



European Research Council

Established by the European Commission

Starting Grant (2017, PE8) – touching the ERC funding

'If immortality unveil...' – development of the novel types of energy storage systems with excellent long-term performance

IMMOCAP

Proof of concept project (2023) – next step for ERC grantees

'It yet remains to see...' - Hybrid electrochemical energy storage system of high power and improved cycle life

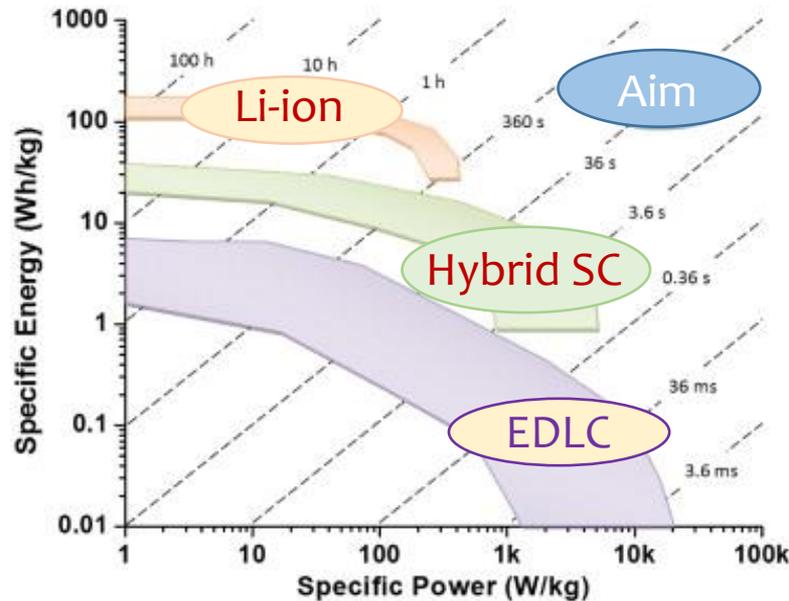
ERC Proof of Concept Lump Sum Grant 2023
(ERC-2023-PoC)



Single perspective does not drive innovations



'If immortality unveil...' – development of the novel types of energy storage systems with excellent long-term performance



Light... heat, vibrations, kinetic, positional energy

(Electro)chemical potential difference

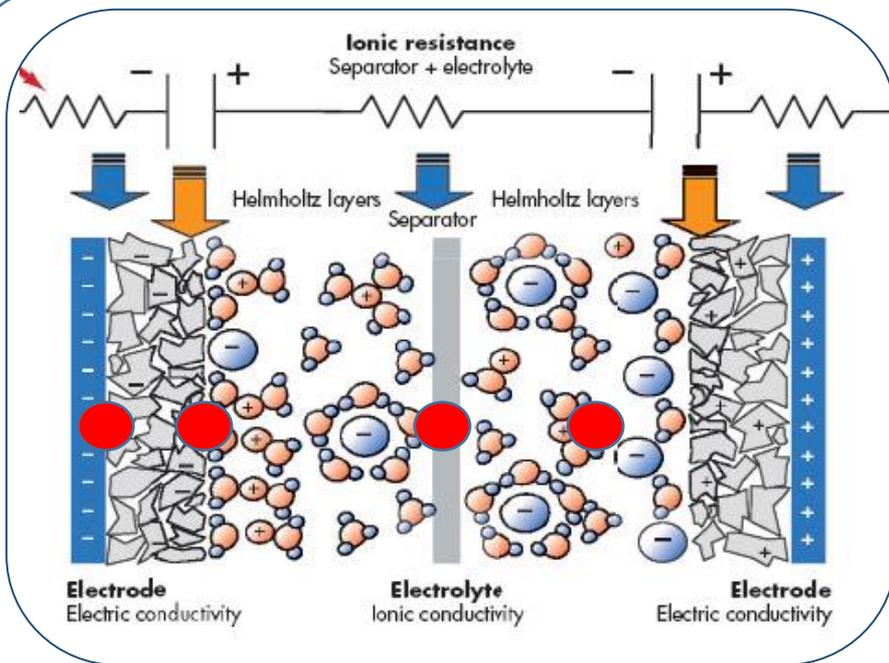
HARVESTING



CONVERSION



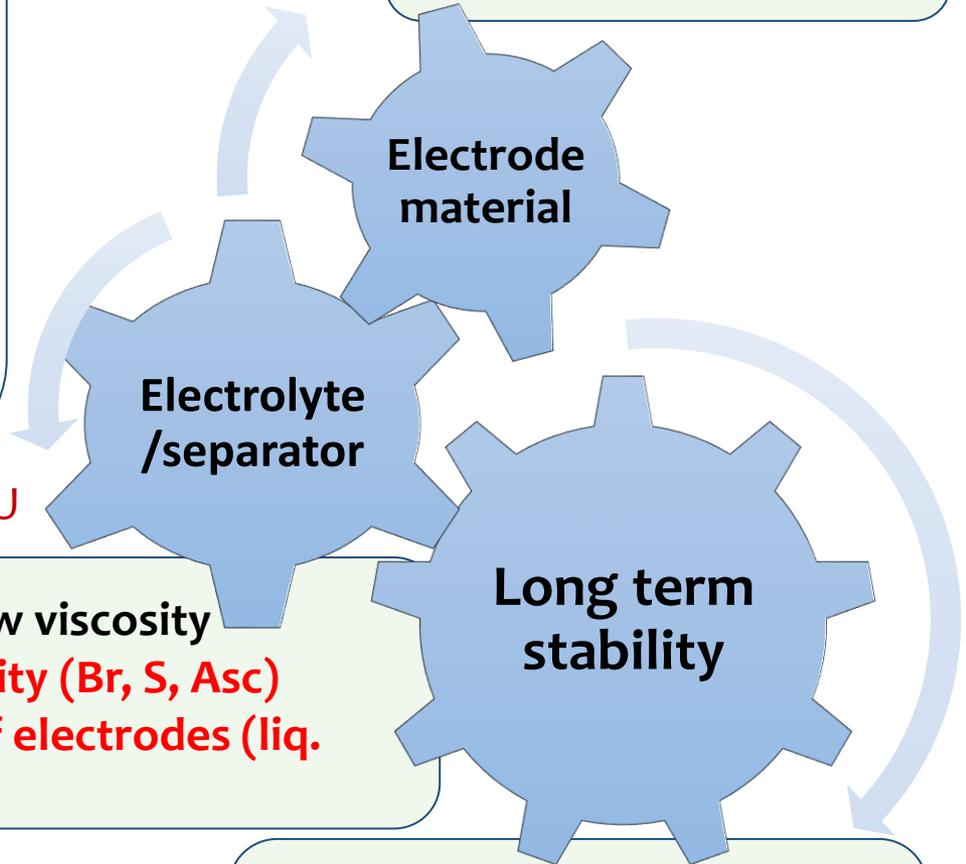
STORAGE



Capacitance, C

- High surface area
- Suitable pore size
- Rheological parameters

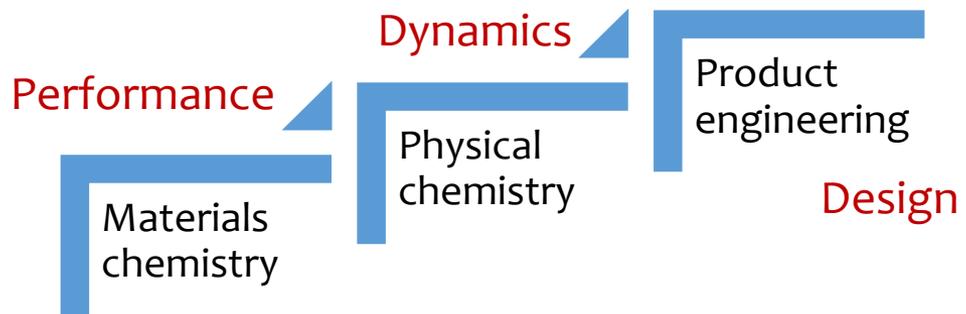
Max. voltage, U



$$C = \epsilon S / d$$

$$E = 0.5 CU^2$$

- High conductivity, low viscosity
- Excellent redox activity (Br, S, Asc)
- Perfect separation of electrodes (liq. membrane)



Phenomena at electrode/electrolyte interface
Operando techniques (Raman, EQCM, E-GC-MS)



Although knowledge cannot guarantee good decisions, common sense suggests that wisdom is an unlikely consequence of ignorance

Sir Harold W. Kroto

Thank you!



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