

**JORNADA D'ECOSISTEMA DE TRANSFERÈNCIA
I INNOVACIÓ EN ENERGIA**



Light-responsive coatings with transparency modulation for smart Windows

Nanostructured Functional Materials group

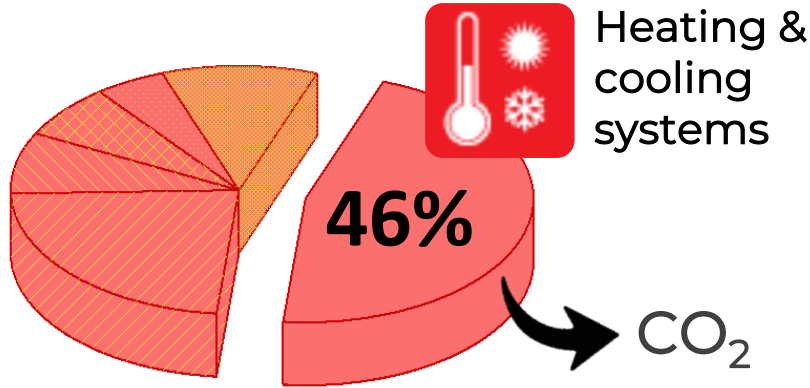


Barcelona, 21/06/2023

Lorenzo Vallan



Problem



Buildings energy consumption

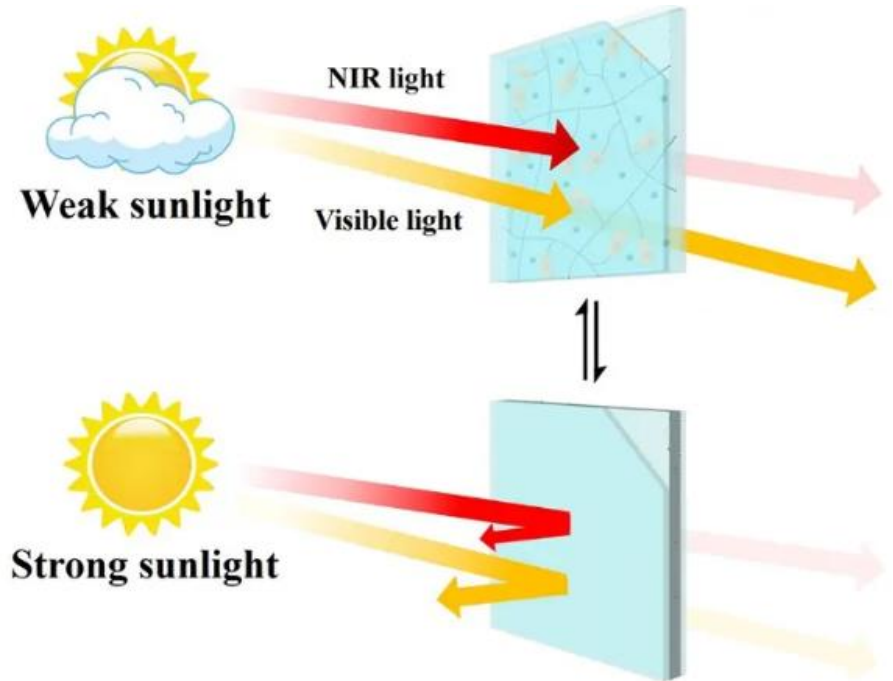


Large glass surface in new buildings



Solution: Smart Windows

Self-regulation of solar light



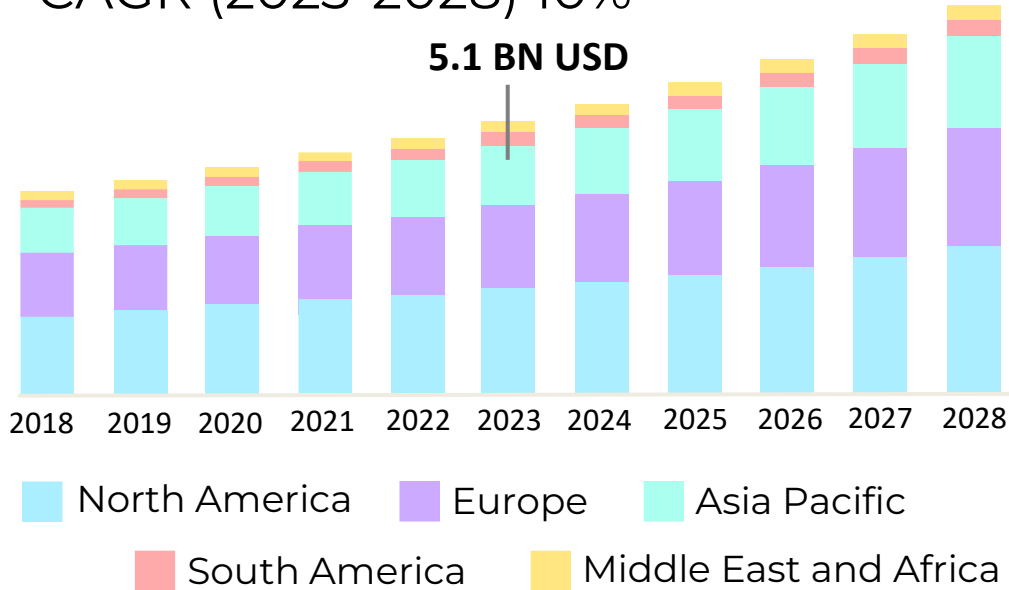
10% saving energy consumption



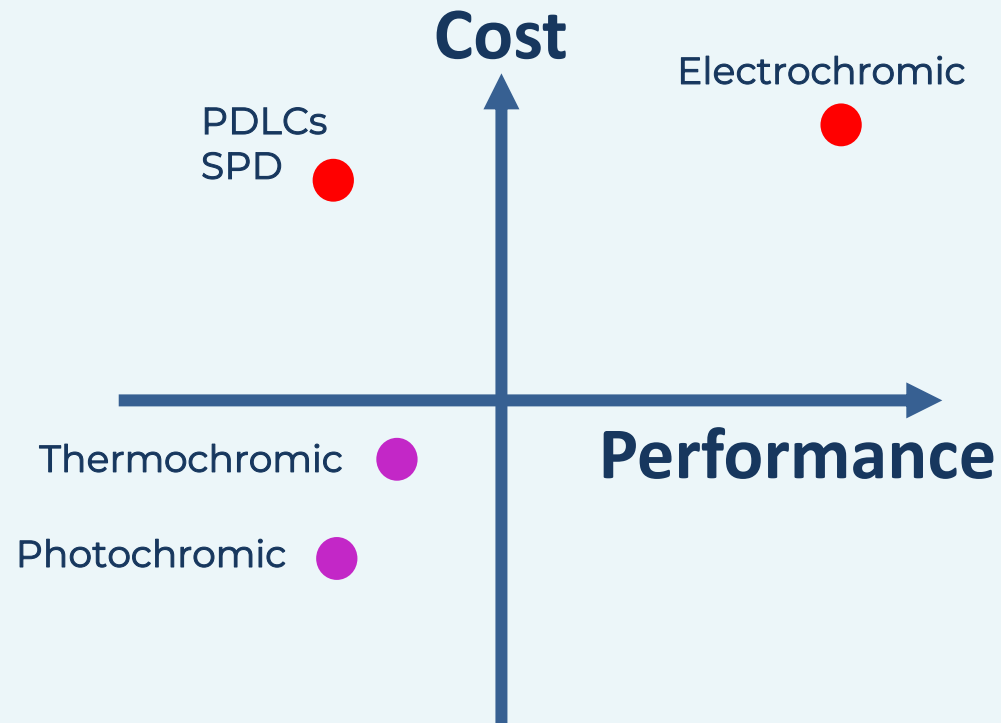
Glare protection

Smart Windows market

CAGR (2023-2028) 10%



Challenges



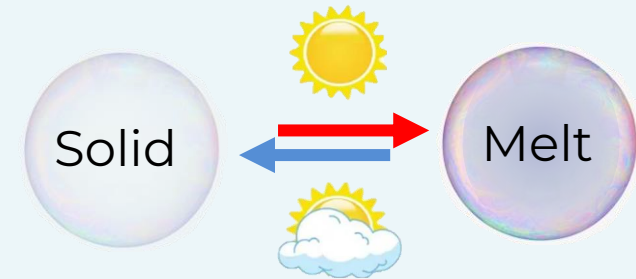
- Voltage-based systems
 - Installation/maintenance cost (~\$ 1000/m²)
 - Transparency
- Self-tinting systems (light, temperature)
 - Slow response
 - Fast degradation
 - Tunability
 - Scalability

Our films



Transparent film, containing:

1. Metal nanoparticles
2. Wax nanospheres:

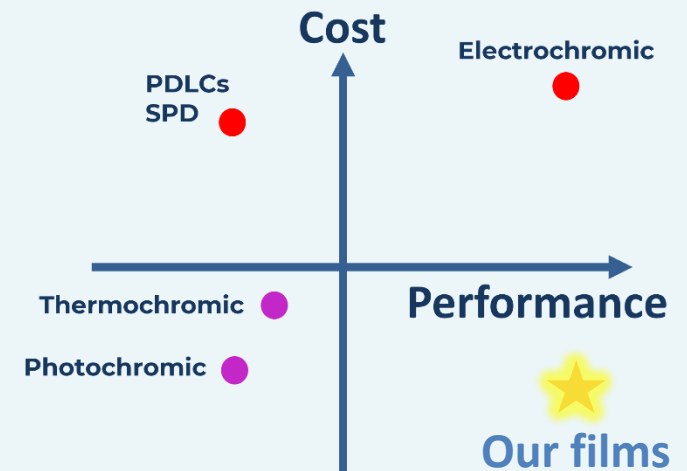


Wax price: <1€ per gram!

For comparison, liquid crystals contained in electrochromic windows cost ~100€ per gram.

Benefits:

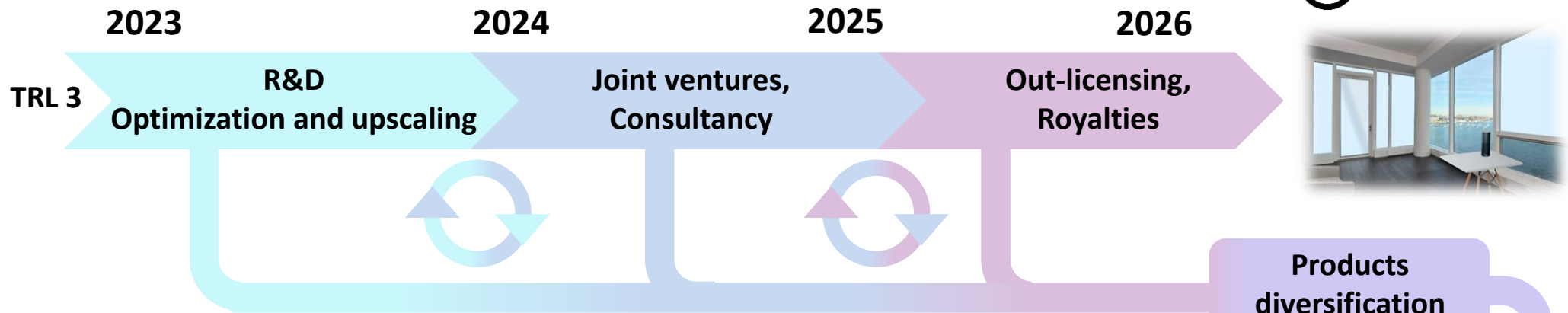
- ☀ Voltage-/circuit-free
- ☀ ++ cost effective
- ☀ Longer-lasting (no dyes!)
- ☀ Green & sustainable manufacturing
- ☀ Easily scalable
- ☀ Aftermarket (also for existing windows)



Development plan



Nanosfun
Nanostructured Functional Materials



Partners and Clients:

- Smart windows producers
- Chemical manufacturers



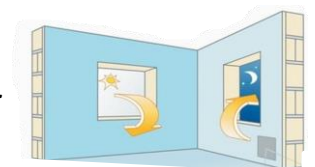
Smart Greenhouse -



Solar concentrator -



Solar thermal storage -





Our team

Team leaders



Dr. Claudio Roscini



Dr. Jordi Hernando Campos



Dr. Daniel Ruiz Molina

Researchers



Jaume Ramón Otaegui



Dr. Lorenzo Vallan



Dr. Marc Villabona Pedemonte



Projects

- AGAUR Producte 94.000€
- Proof of Concept (POC) 200.000€



Patent

WO2017191346



Spin-offs

Future **chromes**

distinkt



Institutions



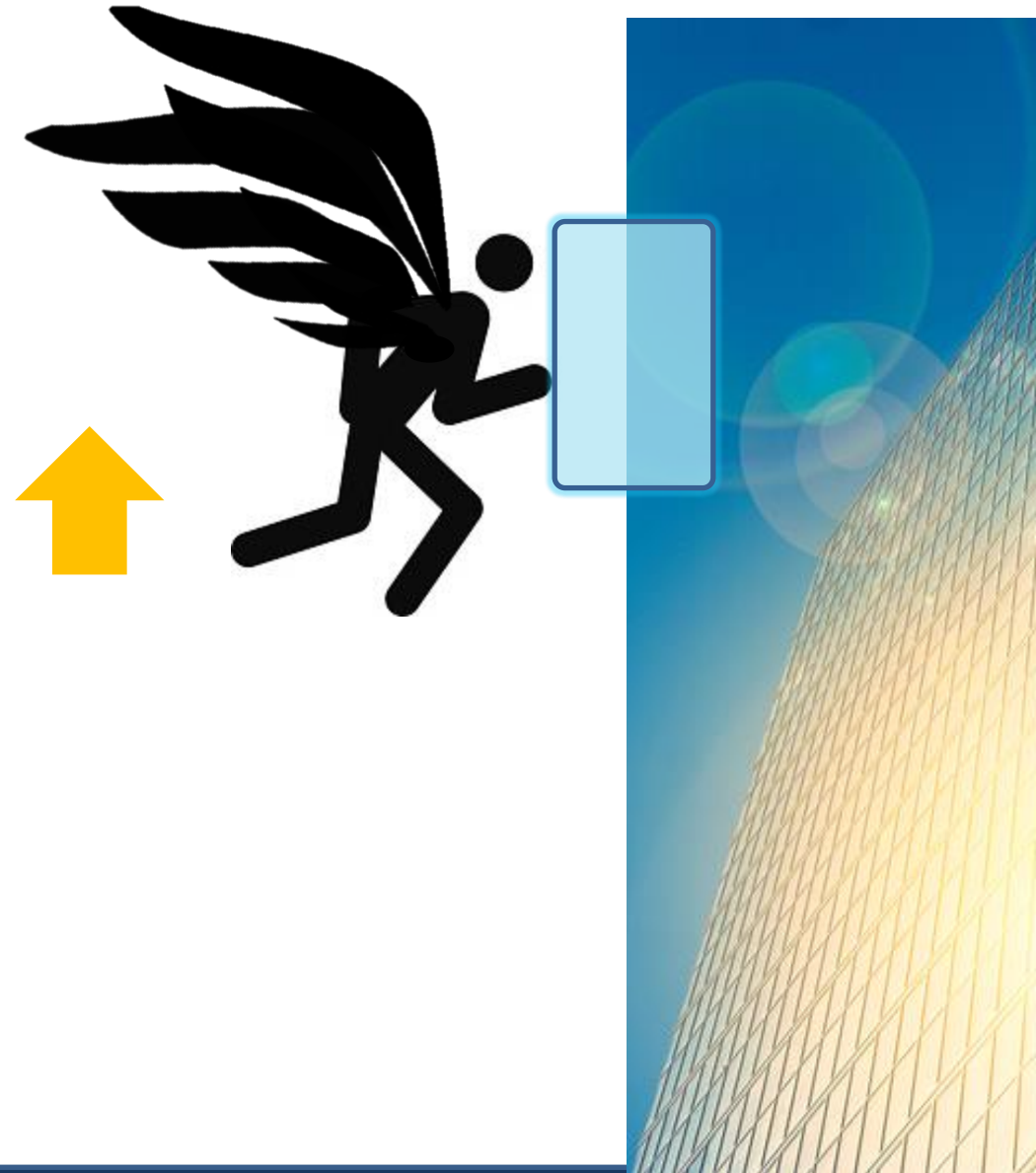
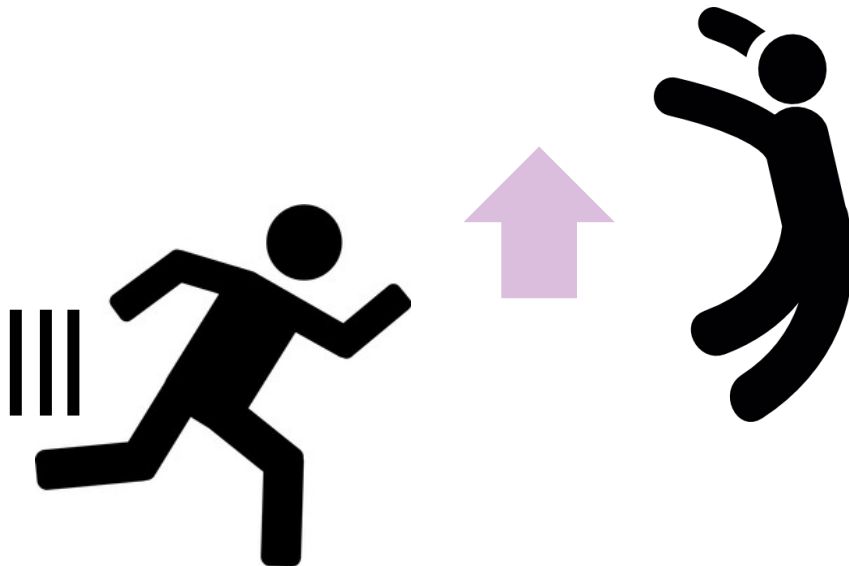
Future needs



NETWORKING WITH COMPANIES:

- Technical facilities
- Product feedback and improvement

- Marketing advisory





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Con financiación de:

