

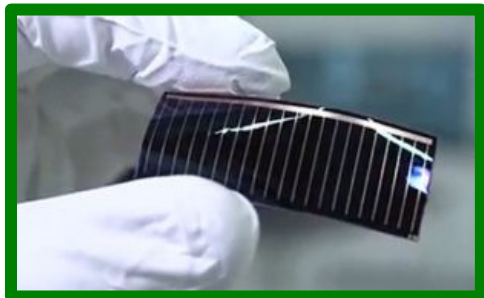
# Hybrid photovoltaic-thermoelectric systems for solar energy harvesting

Project ANR Hydres

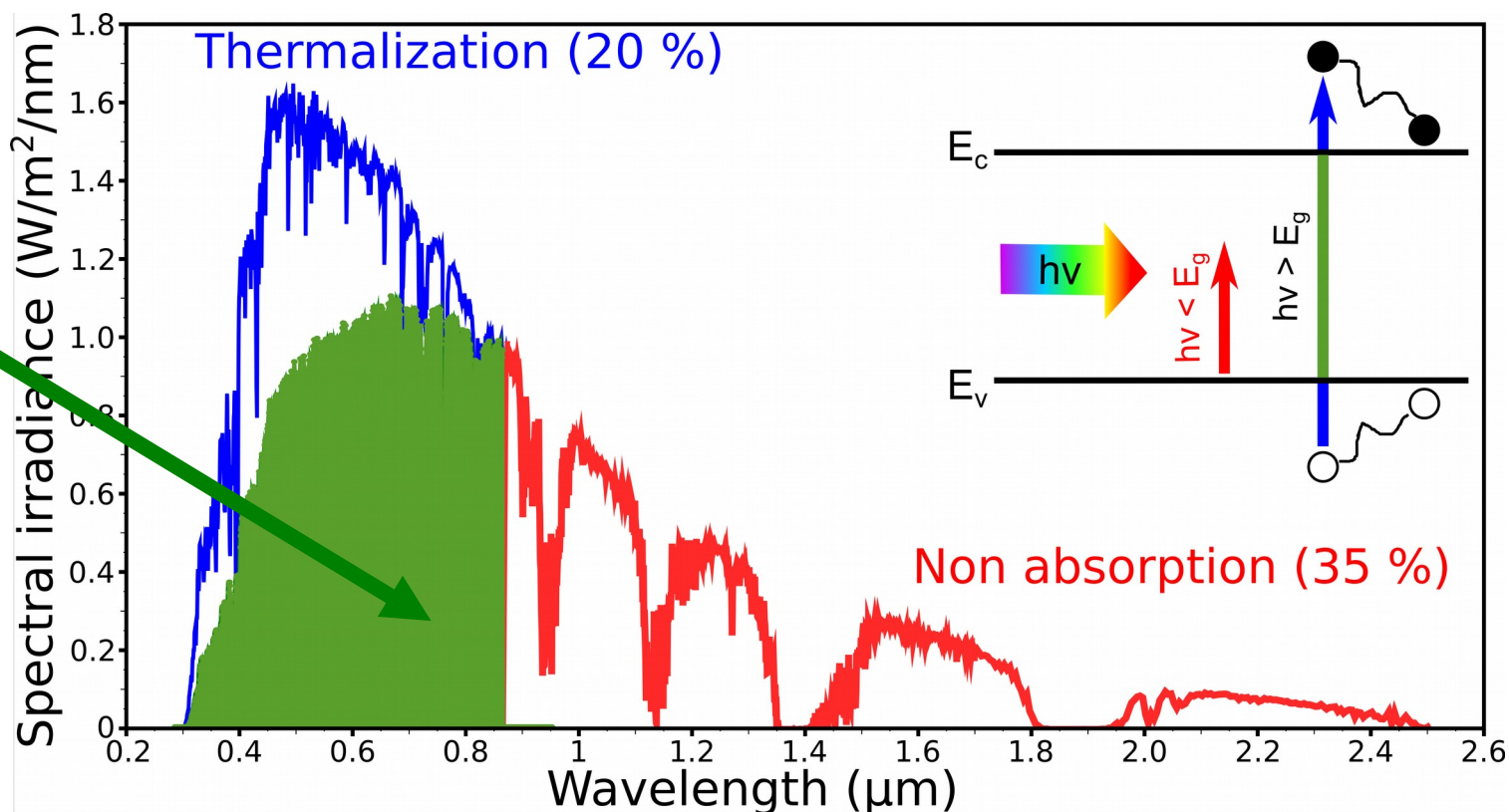
Project leader : Inès Massiot – LAAS-CNRS

# Hydres in a nutshell: motivations

- > How to exceed the efficiency limit for a single-junction solar cell ?



GaAs 29,1 %



- > Our approach: **photovoltaic-thermoelectric hybridization**
- > Targeted application: self-powered microsystems.

# Hydres in a nutshell: objectives & methodology



Project funded by the ANR: **Hybrid** photovoltaic-thermoelectric for solar energy harvesting (2022-2025).

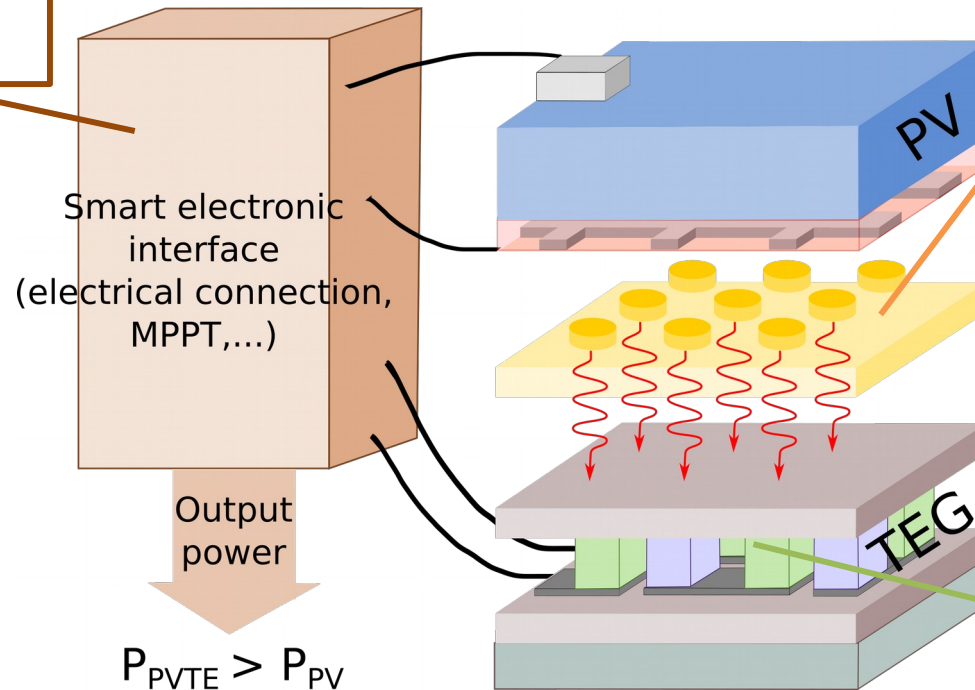
Ultimate goal: **+8-10% absolute gain** with respect to the PV cell at ambient T

## > Methodology:

- **Global approach** of the hybrid PV-TE system
- Design & fabrication of **custom building blocks** of the system
- **Multidisciplinary study**
  - Photovoltaics & plasmonics [LAAS-CNRS]
  - Thermoelectrics [Institut Jean Lamour]
  - Smart electronics [Institut Jean Lamour]

# Hydres in a nutshell: scientific objectives

**Model of the complete system**  
including PV-TE  
interface +  
electronic interface



**Plasmonic photothermal antennas** to boost the TEG efficiency

**Technological fabrication process** for high thermal coupling

**Design & fabrication of custom TEG**