



Arc Electrique et  
Procédés Plasmas Thermiques

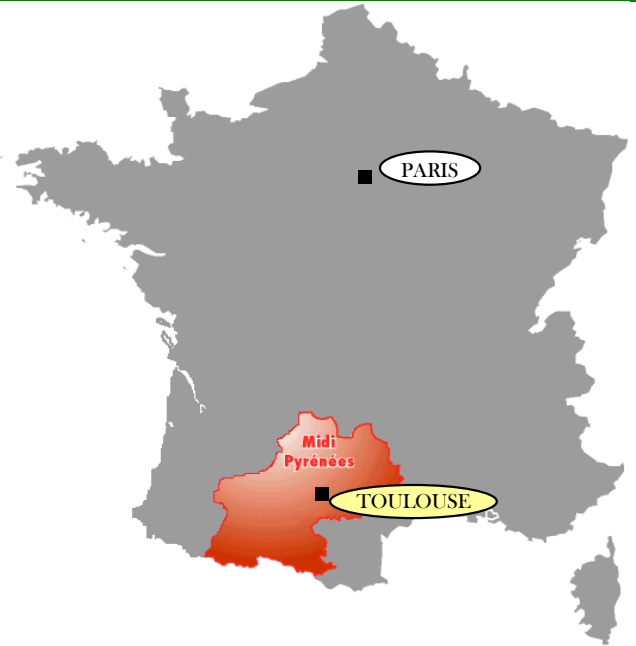
# Arc Electrique & Procédés Plasmas Thermiques

## AEPPT is

- 7 permanent researchers
- 1 Technician
- Students: Trainees, PhD students, post PhDs
- Partnerships with universities and institutions
- Relationships with the industrial environment
- A complementary environment : LAPLACE

## Know-how

Modelling - Calculation - Experience



## Skills in modelling

- Basic properties of thermal plasmas
  - Gas and mixtures
  - Transport coefficients
  - Thermodynamic properties
  - Radiative data
    - Mean absorption coefficients
    - Net emission coefficients
- Thermal plasma flow
  - Modelling of plasma flows
  - Study of turbulence phenomena
  - Mixtures and gas pumping
  - Diphasic flows
- Plasma-surface and arc-surface interaction
  - Heat transfer
  - Arc-surface interaction
  - Electrode phenomena
  - Erosion and vaporization of materials
- 2D / 3D Modelling
  - Stationary and transitory
  - Mobile mesh and movement
  - Real geometry (close to processes)

## Skills in experimentation

- Characterization of plasmas
  - Emission and absorption spectroscopy.
    - 2D: Abel inversion
    - 3D : tomographic reconstruction
  - Density of species
  - Emissivity reports by wavelengths
- Characterization of materials
  - Synthesis of materials
  - Inverse methods
  - Temperature probes
  - Thermally affected zone
  - Calorimetry
  - Pyrometry
  - IR Camera
- Macroscopic sizes
  - Calorimetry
  - Current-voltage measures
- Academic and industrial configurations
  - Plasma jet : spraying torch
  - Transferred arc : cutting, free-burning arc, circuit breaker, furnace
  - Stabilized arc : academical

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