

# Cross Cutting Research Project:

## Generation IV and Transmutation Structure Materials



**Objectives:** Based on the analysis of the experimental programs on innovative nuclear systems and materials in progress and of results already obtained the defined priorities for GETMAT are:

- Improvement and extension of 9-12 Cr F/M steels qualification
- ODS alloys development and characterisation
- Joining and welding procedures qualification (relevant for both ODS and F/M steels)
- Development and definition of corrosion protection barriers
- Improved modelling and experimental validation

## Project Structure

### Training

### User Group

### International initiative

#### WP1: Metallurgical and mechanical behaviour



ODS steel



- Fusion Welding**
- TiG (filler wire)
  - EB (without filler)
- Solid State Welding**
- Diffusion
  - Explosive
  - EMP
  - Friction Stir

#### WP2: Materials compatibility with coolant



Oxidation in He



Oxidation in LBE



Oxidation in SCW

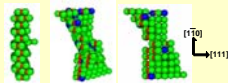
#### WP3: Irradiation behaviour of Structure materials PIE Program

Experiment  
Matrix/Phénix  
Lexur/BOR 60  
ASTIR/BR2  
IBIS,SUMO/HFR  
STIP/SINQ  
MEGAIE

Environment  
Na  
Pb, gas  
LBE, gas  
LBE, Na  
gas  
LBE

Spectra  
fast neutron  
fast neutron  
mixed neutron  
mixed neutron  
proton/neutron  
proton/neutron

#### WP4: Multiscale modelling and model experiments



Pure Fe Fe-7%Cr Fe-12%Cr  
Cluster of self-interstitials in Fe and FeCr alloys.  
Green = Fe, blue = Cr, red = lattice site

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