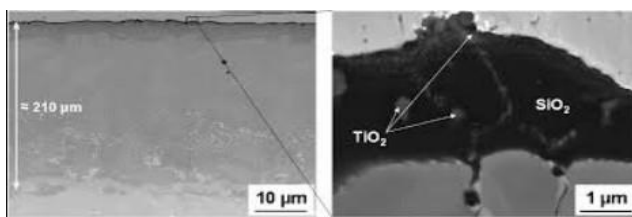
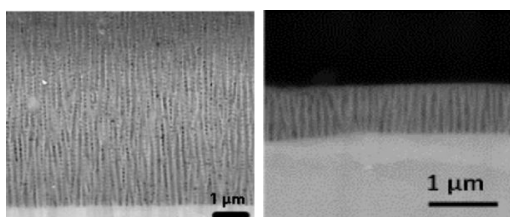


Our skills

Surfaces and interfaces: chemical reactivity of materials



YOUR NEEDS

- Study of the rates and mechanisms of degradation of metals and ceramics in severe environments by oxidation, corrosion and dissolution
- Fundamental study of the kinetics and mechanisms of interfaces reactions
- Study of the corrosion behavior of metals and ceramics in various environments (high temperature, aggressive chemical environments, thermal cycling...)
- Kinetic and thermodynamic modelling of degradation processes and processes implemented for protection to predict the lifespan of materials

OUR SOLUTIONS

- Provide solutions against corrosion through specific experimental methods and modelling
- Develop protection solutions through the study of new materials and multifunctional coatings
- Develop innovative and controlled processes in the field of surface treatments
- Limit materials degradation:
 - Modifying the composition of alloys
 - Modifying the oxidizing nature of the environment (controlled or reducing atmosphere, corrosion inhibitor)
 - Modifying the surface by conversion pre-treatment (anodizing, selective oxidation, etc.) or by protective metal coating (thermochemical treatment, Slurry)
- Thermal analysis / calorimetry / calculations
- Characterize surfaces and interfaces
- Develop structural materials (alloys, pure intermetallic phases)
- Develop coatings by:
 - Chemical conversion
 - Electrolytic plasma anodization and oxidation
 - Cementation process
 - Slurry
 - Sol gel
- Carry out specific electrochemical characterizations:
 - Stationary methods for determining kinetics and corrosion processes
 - Electrochemical impedance spectroscopy
 - Electrochemistry in molten salt and molten silicate media (up to 1300°C)
 - Electrochemistry up to 700 V in pulsed mode

RELATED SKILLS

- Hot corrosion
- Atmospheric corrosion
- Thermal analysis / calorimetry / calculations
- Surfaces and interfaces characterization :
 - Electron microscopy
 - X ray diffraction

OUR REFERENCES



KEYWORDS

Interfaces, corrosion, materials under extreme conditions, surface treatments, surface properties, refractory metallic materials, multifunctional coatings, electrochemistry, thermochemistry.

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