tec21 the engineering of complexity

Towards the Engineering of Complexity: mechanical and process engineering contributions to 21st century societal issues

www.tec21.fr

Ambition: transforming scientific knowledge into aids for industrial conception and/or decision making on complex systems involving couplings

⇒ **new approaches involving multi-physics and multi-scale phenomena**

⇒ **Combined developments in experiments/simulations/instrumentation.**

Main outputs

- **advanced simulation and modeling tools**
- **new technologies** with varied applications
- New **content in education**

- **Demonstrators**
- **Summer school**
- **New M2 on Biorefinery**

Main application fields

- Environmental engineering
- Civil engineering
- Process engineering
- Biorefinery
- Space and aeronautics
- Energy production and saving
- Health

- **Bus. Dev.: Mathieu Tilquin**
- **Enhanced partnerships:** industries, clusters Axelera, Plastipolis, Tenerrdis, Techtera, Indura, ASTech
- **R&D projects,**
- **Student training programs**

Core partners: 3SR, LEGI, LGP2, LRP, Liphy (DyFCom team), Irstea (ETNA team) SIMAP (EPM team) 250 Scientists, engineers and technicians, 190 PhDs, 6.5 M€

Main disciplines: Mechanical engineering, Process Engineering, Soft Matter Physics

Key research targets

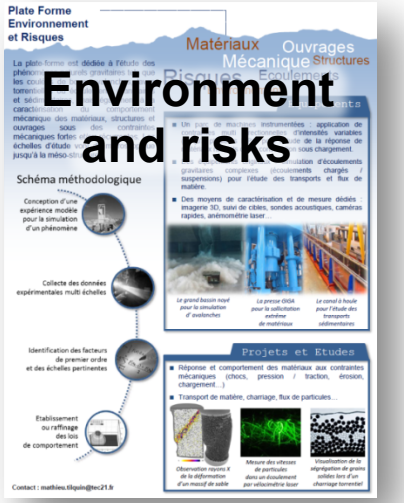
Key words: dense suspensions, granular materials, sediments, mud flows, avalanches, fibrous materials, reservoirs…

Coupling solid and fluid mechanics

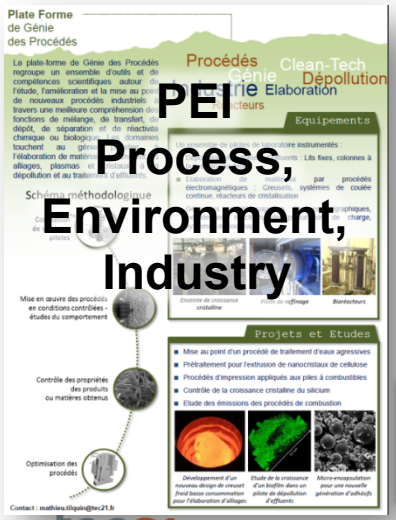
Methods developments in modelling, instrumentation, simulation

Coupling fluid mechanics with biophysicochemical processes at micro-scale

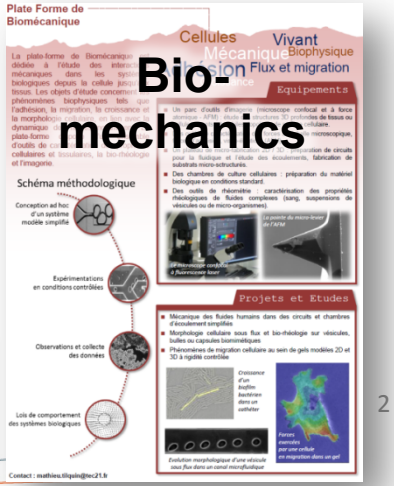
Engineering for human health



Key words: Turbulence, mixing, transfers, multiphase flows, Eco-technologies, clean-technologies, biorefinery (vegetal biomass…)…



Key words: cell mechanics and motility, thrombosis, tissues, biomaterials…



Foster collaborations and international partnerships

Developing platforms

Main current projects