Bid to host ICTMS 2021 in Grenoble, FRANCE

➢ A favourable Context :

Large scale facilities

In June 2020, the second phase of the upgrade of ESRF (European Synchrotron Radiation Facility, figure 1) will be completed. Thanks to these upgrades, all the new beamlines, such as BM18 (multiresolution and high energy tomography beamline), ID18 and ID01 (dedicated to X-ray Photon Correlation Spectroscopy and ptychography techniques), as well as ID06 and ID03 (dedicated to dark field x-ray microscopy) will be fully operational in June 2021.
In July 2021, the ILL (Institute Laue Langevin, figure 1) will open the new beamline NeXT, fully dedicated to tomography (with simultaneous neutrons and X-rays).

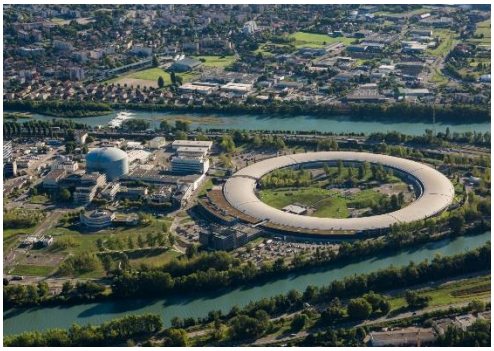


Figure 1: ILL and ESRF

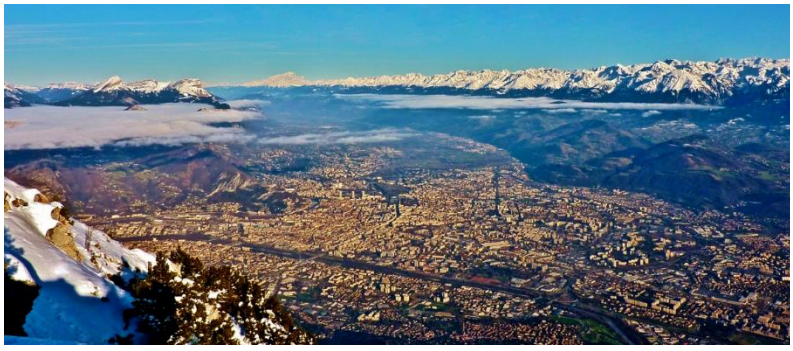


Figure 2: Grenoble

An outstanding academic and industrial environment:

Thanks to the presence in Grenoble of ESRF and ILL, the universities of the French Alpes (Université Grenoble Alpes - UGA and INSA Lyon - UDL) and CNRS have been among the first ones to use X-ray microtomography in material sciences. Research groups in Grenoble and Lyon have acquired a recognized expertise in many application fields such as in situ testing and processing of materials (metallurgy, composites, etc...) and earth science (geomaterials, snow, concrete...). They participated to many of the developments at ESRF (fastest 3D imaging, increased resolution, new contrast acquisition) and at ILL (development of neutron tomography). The universities of Grenoble and Lyon have also developed well established cooperation with industrial partners located in the Alps, e.g., RX Solutions, a manufacturer of lab X-ray tomographs, and NOVITOM, a company specialized in advanced imaging techniques including synchrotron ones. All these links are labelled through national funded projects. More informal, yet strong relationships also exist with other local (Digisens), national or international (Zeiss) industrial partners, expert in X-ray imaging. Last but not least, Grenoble is an important research hub in France and Europe, with over 80 000 university students, among which 3500 PhD students (45% international) and more than 10000 researchers.

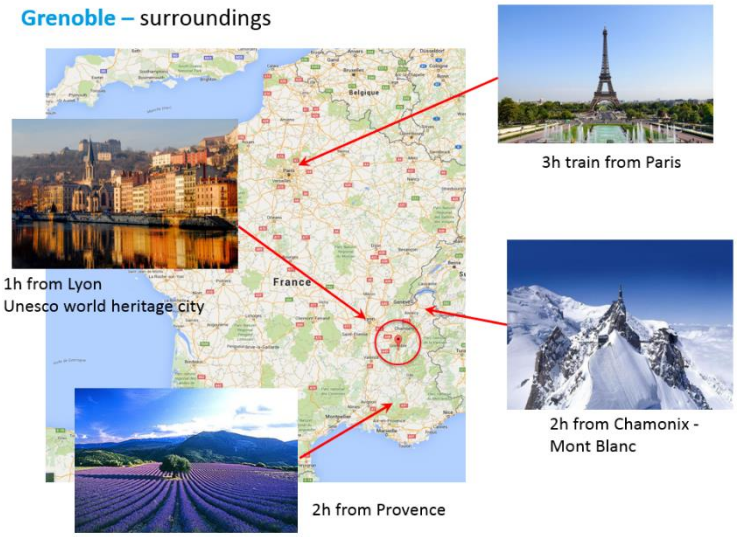
A European environment:

On top of ILL and ESRF being European facilities, both Grenoble and Lyon universities, as well as the CNRS, are involved in major European projects related to X-ray or neutron imaging:

- ITN InnovaXN (main proposer: ESRF; partners: ILL and UGA). This project aims at gathering industrial and academic partners to push the limit of ESRF and ILL imaging techniques in the case of industrial use in the framework of a PhD grants.
- EIT RawMaterials Educational Project Proposal METALSF (main proposer: KTH Royal Institute of Technology in Sweden; Partners: UGA in France, University of Oulu in Finland, Novitom in France, RISE

and SSAB in Sweden). This project aims at developing the transfer of knowledge of the use of tomography to industrial partners through practicals.

A Nice environment:



Grenoble-Alpes is located in the heart of the Alpine massif. At the crossroads of France, Switzerland and Italy and surrounded by the massifs of Belledonne, Vercors, Chartreuse and Oisans, the Alpine metropolis has an exceptional mountain environment (Figure 2) that offers a wide range of leisure activities, both in winter and summer. Furthermore Grenoble is only at 1 hour from Lyon by train, 3 hours from Paris by train, 2 hours from Provence, 2 hours from Mont Blanc

A Secured attendance:

France and Europe is a big actor in tomography with lot of labs, industry as mentioned above and Grenoble is an important research hub in France (more than 10000 researchers and 3500 PhDs students). This large community with important national and international network and the attractiveness of Grenoble will ensure a large participation to the conference.

Based on these achievements and recognition, the universities of Grenoble and Lyon and the large scale facilities ESRF and ILL decided to submit a bid to host the next ICTMS conference.

➢ Scope of the conference

ICTMS 2021 will bring together an international group of scientists, from universities, research organisations and industry, to discuss a broad range of issues related to the use of 3D tomographic imaging in materials and structures. The main focus of this conference will be the most recent advances in the following areas:

- Recent advances in lab and synchrotron based tomography
  - Contrast: absorption, refraction, diffraction …. of X-rays, neutron or electrons
  - Spatial and temporal resolution
  - in-situ experiments
  - Combined tomography
- Recent advances in tomographic reconstruction techniques
  - Advances in algebraic algorithm
  - Machine learning
  - Large data processing
- Recent advances in data treatment
  - Segmentation
  - Quantification
  - Digital volume correlation

- Machine learning
- Large data processing
- From data to simulation

- Case studies including applications to further the understanding of materials, structures and processes:
  - Aerospace, automotive
  - Civil engineering
  - Life science
  - Earth science
  - Additive manufacturing
  - Energy
  - Food industry

➢ Proposed location:

If the bid is accepted, the 5th ICTMS will be held in Grenoble, a city located in the French Alps. Grenoble is an agglomeration of 700,000 inhabitants and offers sufficient international hotel capacity to host the event. Grenoble can easily be reached:

- by plane:
  - Lyon Saint Exupery + shuttle bus (85km) to Grenoble (every hours - 1h trip)
  - Geneva + Shuttle bus (140km) to Grenoble (every other hour - 2h30 trip - Get off at Grenoble Bus Station)
- by train: from Paris (TGV – 3h)

The conference will be host at PHELMA in a recent building (see figure 3 and 4), close to the railway station, that:

- offers a main amphitheatre that can host all the participants
- is equipped with smaller rooms that will allow for parallel sessions
- is located near ESRF and ILL to allow for easy visits
- is located in the city centre closed to hotels and restaurants

Figure 3 : PHELMA (Grenoble INP)

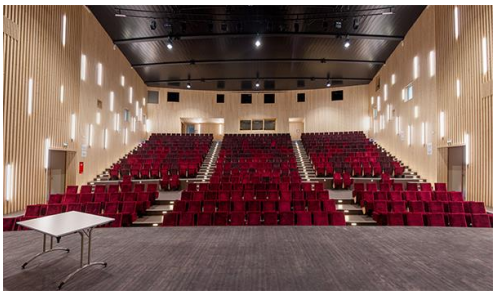


Figure 4 : main amphitheatre

➢ Proposed Organisation

Forecast schedule:

- Abstract submission: 15th December 2020
- Notification of acceptance: 1st March 2021
- Early registration: 1st May 2021
- Late registration: 1st June 2021
- Dates: 5th – 9th July 2021

Conference week

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning	Registration	Keynote	Keynote	Keynote	Keynote
		Parallel session	Parallel session	Parallel session	Parallel session
Afternoon Part 1	Keynote	Poster	Poster	Visit Workshop	Parallel session
	Parallel session				
Afternoon Part 2	Parallel session	Parallel session	Parallel session	Visit Workshop	
Evening	Welcome pot			Gala dinner	

Keynote speakers:

The keynote speakers will be chosen among experts in the following topics:

- Correlative tomography
- Phase contrast and diffraction tomography
- Combination of X-ray and neutron tomography
- Machine learning and data treatment
- Multiscale imaging of biological tissues
- Next bottlenecks and challenges of X-ray imaging

Details of the visits:

The following visit will be organised. Depending on the number of participants, the participant can choose one or two visits among:

- Combination of neutron and X-ray imaging :
  - the current neutron beamline
  - the new beamline
- X-ray multiscale imagining
  - BM18: multiresolution and high energy tomography beamline
  - ID16 or ID22: nanotomography beamline
  - ID18 or ID01: beamline dedicated to X-ray Photon Correlation Spectroscopy or to ptychography
  - ID06 or ID03: dedicated to dark field x-ray microscopy

Details of the workshops:

Workshops will be proposed on the following topics:

- Tomography reconstruction
- Volume visualisation and analysis
- Hardware: laboratory X-ray microtomography, detectors and X-ray sources
- PhD and Post doc problems to solve

PhD and Post Doc involvement:

- 6 Invited presentation of PhD and Post Doc (3 + 3)
- workshop devoted to PhD and Post Doc problems
- 4 Poster prices for PhD and PostDocs (2 + 2)
- Doctoral School will be involved in the organization of the conference

➢ Committees :

Scientific committee:

The scientific committee will be constituted among experts world wild recognised from the various continents. It will be a mix of scientists already involved in the committees of the previous conferences and of new members.

Local organisation committee:

The local organization committee will be composed of researchers from Grenoble and Lyon University, from ESRF and ILL and also one or two PhD Students.

- Chair persons: Sabine ROLLAND DU ROSCOAT (Grenoble) and Eric MAIRE (Lyon)
- Grenoble: Pierre LHUISSIER, Nicolas LENOIR, Luc SALVO
- Lyon: Jérôme ADRIEN, Jean-Yves BUFFIERE
- ILL: Alessandro TENGATTINI, Lukas HELFEN
- ESRF: Elodie BOLLER, Julie VILLANOVA
- PhD student: to be defined later

➢ Financial aspect

Financial supports are expected from Universities of Grenoble, Lyon, CNRS, ESRF, ILL, our industrial partners. The forecast costs are the following:

- Early registration: 1th May 2021
  - PhD student: 650 €
  - Academic position: 750 €
- Late registration: 1th June 2021
  - PhD student: 750 €
  - Academic position: 850 €

These fees include access to the conference, coffee break, lunches, gala dinner and social events proposed by the organisation committee.