



J-FAST kick-off meeting

Grenoble - June 22nd-24th, 2022

Dear project partners, Dear colleagues and friends,

It is our great pleasure to welcome you to this scientific workshop, on the occasion of the creation of the International Research Laboratory *J-FAST* between *UGA*, *CNRS*, *UT* and *Air Liquide*, located in the Graduate School of Pure and Applied Sciences at the University of Tsukuba.

The workshop consists in two and half days of scientific presentations and discussions on *J-FAST* core research topics, as well as complementary research topics resulting from the long-lasting Grenoble-Tsukuba collaboration.

A special event is organized in the late afternoon of Friday for the official signature of the *J-FAST* agreement, in the presence of University of Tsukuba president Kyosuke NAGATA, CEO of CNRS Antoine PETIT, University Grenoble Alpes president Yassine LAKHNECH, and representative from Air Liquide Laboratory in Japan Christian Dussarrat.

This workshop is held jointly with the annual meeting of the Tsukuba Campus-In-Campus initiative, whereby cooperative Master and PhD double degree programs will be highlighted.

We deeply thank the “LANEF” the “Fondation Nanosciences” and the French embassy in Japan for their financial support, and wish you all a pleasant stay in Grenoble.



Shinji Kuroda, Director of J - FAST



Marceline Bonvalot, Deputy Director of J – FAST



**Service pour la
Science et la
Technologie**

J-FAST kick-off meeting : scientific program

Grenoble, June 22nd-24th 2022 - Institut NEEL, D420



In red : online presentation

Wednesday June 22nd

08:00 Welcome coffee

08:45 – 09:00 Welcoming message:

H. Courtois, Vice President for Research and Innovation, UGA
F. Petroff, Scientific Deputy Director, Physics department, CNRS
L. Magaud, Director of NEEL Institute, CNRS
K. Akimoto (UT) and E. Gheeraert (UGA and UT)

09:00 – 10:30 **Atomic scale processing**

M. Bonvalot (LTM, UGA) : *Area Selective Deposition Processes : recent developments*

N. Blasco (Air Liquide Advanced Materials) : *Recent trends in Atomic Layer Deposition for Advanced Semiconductors – Case Studies of High-k Capacitors, Silicon Oxide and Metallization Developments*

C. Vallée (LTM, UGA and SUNY, Albany-NY) : *Atomic scale Processing in Semiconductor Device Manufacturing*

Coffee break

11:00 – 13:00 **Wide Bandgap Semiconductors 1: growth and characterization**

H. Okumura (UT) : *α - and β -(AlGa)₂O₃ growth using Molecular Beam Epitaxy*

C. Durand (PHELIQS, UGA) : *Epitaxy of nitride nanowires heterostructures*

A. Traore (UT) : *Transient Photoconductivity in β -Ga₂O₃*

P. Ferrandis (NEEL, UGA) : *Transport properties of Schottky barrier diodes performed using β -Ga₂O₃ substrates grown by the floating zone technique*

Lunch break

14:30 – 15:30 **Plasma etching for wide band gap device technology**

C. Mannequin (UT) : *Reactive Ion Etching and Atomic Layer Etching of Wide Band Gap Semiconductors: ALE process for GaN with the substitution of Ar by Kr*

T. Makino (UT) : *Plasma etching for devices processes of diamond*

Coffee break

16:00 – 18:00 Wide Bandgap Semiconductors 2: characterization

A. Uedono (UT) : *Defects characterization by Positron Annihilation Spectroscopy*

H. Umezawa (AIST Osaka and Tsukuba) : *Characterization of diamond power devices by Electron Beam Induced Current (EBIC)*

J. Pernot (NEEL, UGA) : *Characterization of Diamond devices*

G. Jacopin (NEEL, CNRS) : *Photon-Correlation Cathodoluminescence Spectroscopy in a SEM: a tool to analyze the performance of optoelectronics devices.*

Thursday June 23rd

08:30 – 10:30 Magnetic materials, from magnets to spintronics

S. Kuroda (UT) : *Quantum dots with a single magnetic atom of Cr*

L. Vila (Spintec, CEA) : *Ferroelectric control of the spin-charge conversion for ultralow power spintronics*

T. Suemasu (UT) : *Significant research progresses through collaborative research via doctoral students: BaSi₂ solar cells and Mn₄N-based compensated ferrimagnets.*

H. Yanagihara (UT) : *Magnetic anisotropy in magnetic oxide films with spinel structure*

Coffee break

11:00-13:00 Other New semiconductors

S. Gambarelli (SyMMES, CEA) : *A new direct gap semiconductor: BaSi₂, defect characterization*

T. Sakurai (UT) : *Carrier recombination in alkali-metal treated CIGS solar cells*

H. Okuno (MEM, CEA) : *Scanning transmission electron microscopy for the study of epitaxially grown TMDs and their hetero-structures.*

J. Kasprzak (NEEL, CNRS) : *Coherence in layered semiconductors inferred with nonlinear spectroscopy*

Lunch break

14:30 – 16:00 Exploratory topics in particle physics

H. Tanimoto (UT) : *Fabrication of silver nanoparticles by visible light irradiation*

T. Chujo (UT) : *A High Granularity Silicon-tungsten Based Electromagnetic Calorimeter in a Forward Direction for ALICE*

J. Macias-Peres (LPSC, CNRS) : *KID's cameras for astronomy and cosmology*

16:30 – 18:00 **Visits of labs:** IRIG : B. Daudin, C. Durand, E. Monroy
NEEL : J. Kasprzak and J. Pernot

Friday June 24th

08:30 – 10:00 **Visit of the lab:** LTM (T. Baron)

10:30 – 12:30 **Exploratory topics in bio- and nano-chemistry**

S. Tsujimura (UT) : *Printable biofuel cells towards wearable applications*

A. Zebda (TIMC,INSERM) : *Implantable glucose biofuel cells*

M. Chavarot-Kerlidou (LCBM, CNRS) : *Bio-inspired catalysts for solar fuels generation*

T. Kojima (UT) : *Photocatalytic Energy Conversion using metal complexes and porphyrins*

S. Menage (LCBM, CNRS) : *NiKA as versatile scaffold for the design of artificial oxidases/oxygenases*

Lunch break

14:00 - 16:00 **Overview of Grenoble-Tsukuba collaboration, collaboration tools**

- Organization of the J-FAST International Laboratory
- Closing remarks - End of the workshop

17:00 - 18:00 Official signature ceremony (jointly with CiC meeting)
