CARAC 2019

CARAC 2019 6 edition
THE UNIQUE EVENT FOR INDUSTRY
DEDICATED TO MATERIAL CHARACTERISATION
28 -29 November
2019 in Grenoble

Report of Contributions

https://workshops.ill.fr/e/206

Contribution ID: **1** Type: **not specified**

Introduction to the material characterisation platforms based in Grenoble

Thursday, 28 November 2019 08:45 (5 minutes)

Welcome speech from PAC-G's director Jerome Beaucour

Presenter: Mr BEAUCOUR, Jerome (Director of PAC-G)

Session Classification: Conference and welcome session

Contribution ID: **2** Type: **not specified**

Platform for Advanced Characterisation – Grenoble (PAC-G)

Thursday, 28 November 2019 08:50 (15 minutes)

Set up within the framework of the IRT Nanoelec, the Platform for Advanced Characterisation - Grenoble (PAC-G) proposes access to advanced characterisation techniques as a service. The PAC-G was set up within the frame of IRT Nanoelec, with funding from the "Investissements d'avenir" program (reference ANR-10-AIRT-05).
PAC-G brings together European neutron source ILL, the European synchrotron ESRF, the CEA-Leti's PFNC, The Laboratory of Subatomic Physics & Cosmology (LPSC) in a very innovative service offer for the industry.

Presenter: Mr VARELA DELLA GIUSTINA, Rafael (Ingénieur business development de la PAC-G)

Session Classification: Conference and welcome session

Track Classification: Micro- & nano-electronics

Contribution ID: **3** Type: **not specified**

Grenoble-INP / CMTC

Thursday, 28 November 2019 09:05 (8 minutes)

The Consortium des Moyens Technologiques Communs (CMTC) is the Grenoble INP Material characterisation platform. It was created in 1977

The CMTC platform meets an objective to pool cutting-edge equipment in the field of micro- and nano-structural characterisation and centralise expertise to serve the needs of Research, Training and Enhancement.

The CMTC platform proposes several approaches to meet the demands of its partners or customers:

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Perform the required characterisation to ensure progress of research programmes
Train students in characterisation techniques
Enable access to characterisation equipment after training
Develop new techniques and new know-how
Perform manufacturing studies and services for public and private sectors.
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Presenter: Dr MANIGUET, Laurent (Directeur du CMTC)

Session Classification: Conference and welcome session

Contribution ID: **4** Type: **not specified**

Institut Néel, CNRS-UGA

Thursday, 28 November 2019 09:13 (8 minutes)

Institut NEEL is a laboratory for fundamental research in condensed matter physics, enriched by interdisciplinary activities at the interfaces with chemistry, engineering and biology.

We explore a vast field of science: superconductivity, quantum fluids, new materials, crystallography, surface science, quantum nanoelectronics, nanomechanics, nonlinear and quantum optics, spintronics, magnetism…

The Institut Néel has exceptional expertise in advanced technology, closely integrated with its research projects. The Institute's engineers and technicians, assigned to specialist technical groups but working in close proximity with the research teams, make a direct contribution to scientific progress.

In close cooperation with universities, the Institut NEEL is involved in teaching and training at the three levels of tertiary education: the Bachelor's, Master's and Doctoral diplomas. Training of about one hundred PhD students is a vital element in the success of the Institute's research activities. In addition, the Institute actively cooperates in the organisation of many International Science Schools.

Our activity is organized into three strongly interacting scientific Departments, and comprising seventeen research teams and eighteen technological groups or common services.

The Institute is actively involved in the dissemination and exploitation of its research results, via multiple partnerships with industry. By its implantation in Grenoble, a unique international research site, it benefits from the strong local links with the CEA and the large European neutron and X-Ray facilities: ILL and ESRF.

Presenter: Dr MOSSANG, Eric (Ingénieur de Recherche chez Institut Néel CNRS)

Session Classification: Conference and welcome session

Contribution ID: **5** Type: **not specified**

IRIG - Interdisciplinary Research Institute of Grenoble (CEA)

Thursday, 28 November 2019 09:22 (8 minutes)

CEA's Fundamental Research Division (DRF) is active in the fields of physics, chemistry, biology and health, materials sciences, climate sciences and the environment. Within this department, the IRIG institute, created on January 1st, 2019 by bringing together 3 former Grenoble institutes of the DRF (IBS, BIG and INAC), conducts research in biology, health, nanosciences, cryotechnologies and new technologies for energy and the environment. Physicists, chemists, biologists, physicians, computer scientists and mathematicians participate jointly in this fundamental research and the applications that result from it, giving the institute a remarkable capacity to respond to major societal challenges.

IRIG welcomes about 1000 people who carry out their research activities in a joint research unit (UMR). The 10 UMR of the institute are supervised by the CEA and University Grenoble Alpes; some of them have additional trusteeship which may be the CNRS, Inserm or Inra. These UMRs are grouped into five disciplinary departments.

The scientific excellence that is developed within the teams and all the expertise gathered within the IRIG allow the development of multidisciplinary research. This research is based on a very exceptional park of research platforms and infrastructures: FRISBI (National Infrastructure of Integrative Structural Biology), ProFI (National Proteomics Infrastructure), PFNC (Nano Characterization Platform), Upstream Technology Platform (PTA), 400W cryogenics station, CRG ESRF & ILL lines, Integrated Structural Biology Platforms, etc. Research work is generally carried out in the framework of national and international academic partnerships; they lead to many applications, allowing IRIG to develop and develop industrial partnerships with start-ups, SMEs and large companies.

Presenter: Dr RIEUTORD, Francois (Chef chez INAC)

Session Classification: Conference and welcome session

Contribution ID: **6** Type: **not specified**

CALIPSOplus and NFFA: access to advanced facilities granted by European projects

Thursday, 28 November 2019 09:30 (4 minutes)

Presenter: Dr CAPRIA, Ennio (Chef adjoint du développement des affaires à l'ESRF)

Session Classification: Conference and welcome session

Contribution ID: **7** Type: **not specified**

Combined x-ray nano-tomography and Small Angle Neutron Scattering characterisation applied to reliability and process development

Thursday, 28 November 2019 16:30 (2 hours)

Synchrotron radiation and neutron techniques have proved to be powerful tools in the understanding of failure mechanisms and in the characterisation of physical and morphological properties of complex structures for microelectronics. The ability to get high quality local as well as statistical information on defects has become paramount for failure analysis and reliability assessment of new process technologies. In this work we show the application of synchrotron x-ray nano-tomography to the study of voids and intermetallic precipitates in copper pillars used as vertical interconnections in 3D integration technologies. A Cu pillar is basically a Cu cylinder topped by a Sn hemisphere. Thermal reflows are then applied to stabilise the structure. Several defects appear at the interface between Cu and Sn features, jeopardising the mechanical and electrical reliability of the structure. These structures cannot be fully characterised by conventional electrical microscopy techniques as they are real 3D objects. Synchrotron X-ray nano-tomography with real resolution down to 30nm appears as an alternative to the standard lab characterisation tools. The local investigation is then complemented by the use of Small Angle Neutron Scattering (SANS) technique, an advanced method to provide statistical information the average size and number of these defects as a function of the number of reflows. Thousands of copper pillars are characterised at the same time providing insights on the yield and mechanisms of defect formation, coalescence and propagation. Understanding the influence of process parameters in the reliability of 3D interconnects is paramount for the semiconductors industry.

Primary authors: Mr VARELA DELLA GIUSTINA, rafael (Institut Laue-Langevin); HONECKER, Dirk; LETICHE, Manon (ILL); Dr CAPRIA, Ennio (Chef adjoint du développement des affaires à l'ESRF); Dr FRACZKIEWICZ, Alexandra (CEA); Dr GERGAUD, Patrice (CEA); Dr BICAIS-LEPINAY, Nadine (STMicroelectronics); Dr BLEUET, Pierre; Dr CLOETENS, Peter (ESRF); Dr LORUT, Frederic (STMicroelectronics)

Presenter: Mr VARELA DELLA GIUSTINA, rafael (Institut Laue-Langevin)

Session Classification: Best poster contribution award

Track Classification: Micro- & nano-electronics

Contribution ID: **8** Type: **not specified**

Strain mapping of transistor structures in a 22nm Fully Depleted Silicon-On-Insulator technology

Thursday, 28 November 2019 16:30 (2 hours)

Strain mapping of transistor structures in a 22nm Fully Depleted Silicon-On-Insulator technology

D. Kleimaier (1), Z. Zhao (1), D. Utess (1), I. Saadat (2), F. Ravaux (2), K. Sloyan (2)
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(2) Khalifa University, Abu Dhabi, United Arab Emirates
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With the advent of the Big Data and 5G era, modern electronic devices are needed to be operated with low energy consumption, high performance, and manufactured at low cost. One of potential IC technologies candidates is 22FDX offered by GLOBALFOUNDRIES that utilizes a fully depleted silicon-on-insulator (FDSOI) technique. FDSOI employs a thin buried oxide layer to form an ultra-thin channel so that short-channel effects can be mitigated and parasitics of such devices can also be reduced comparing to bulk CMOS technology. Speed and power consumption of devices are improved accordingly.
Introducing mechanical strain to transistor channels e.g. by epitaxial growth or process induced pre-stressed overlayers or periphery layouts alters the crystal lattice and thus also the band structure of the semiconducting channel. Therefore such changes in the energy band may also lead to the alteration of the carrier mobility. With the proper strain introduced to N- and P-type transistors, device performance can consequently be improved even for their RF capability, especially in FDSOI technology due to its thin thickness of the channel.
As different requirements of strain for N- or P-type transistors e.g. along the direction of the channel, the characterization of strain in electronic devices is necessary, both for monitoring the intended engineered strain but also the unintended strain states. Since in modern FDSOI technologies and other related transistor technologies the feature sizes such as channel length and thickness are typically in an order of nanometers, the strain characterization requires high spatial resolution. Such strain mapping with high spatial resolution combined with high precision can be achieved via (scanning) transmission electron microscopy (STEM).
In this work, two techniques: the precession electron diffraction (PED) and the nano beam diffraction (NBD) are being used to investigate transistor test structures and to quantify strain states on transistor structures in a 22nm Fully Depleted Silicon-On-Insulator technology. After a motivation on strain engineering in semiconductor devices the working principle as well as the measurement setup of the applied techniques shall be introduced. Finally the aim is to present recent findings of strain mapping experiments on GLOBALFOUNDRIES' current technology achieved by the presented measurement methods as is shown in figure 1 for just one example for a common pMOS structure. In order to demonstrate strain as an important performance knob strain measurements are also being related with electrical device measurements. Certain differences between these methods, e.g. in terms of accuracy, resolution, capability and time-efficiency will be pointed out.

Fig.1: TEM micrograph with an overlay strain map of the xx-component of the strain tensor (channel direction) of a standard pMOS transistor of GLOBALFOUNDRIES' 22FDX technology.

Primary authors: Mr KLEIMAIER, Dominik (Globalfoundries); Dr ZHAO, Zhixing (Globalfoundries); Mr UTESS, Dirk (Globalfoundries); Prof. SAADAT, Irfan (Khalifa University, Abu Dhabi); Dr RAVAUX, Florent (Khalifa University, Abu Dhabi); Dr SLOYAN, Karen (Khalifa University, Abu Dhabi)

Presenter: Mr KLEIMAIER, Dominik (Globalfoundries)

Session Classification: Best poster contribution award

Track Classification: Micro- & nano-electronics

Contribution ID: **9** Type: **not specified**

Better in Vacuum - how vacuum can improve investigation of 2D materials using conductive Atomic Force Microscopy (AFM)

Thursday, 28 November 2019 16:30 (2 hours)

In the last years, the aim of semiconductor industry to produce nanoscale-sized devices determined an increasing interest for a series of 2D materials. Among them, transition metal dichalcogenides (TMDs) are under investigation due to some promising electrical characteristics, such as an inherent band gap and a relatively high mobility of charge carriers, exhibited at nanoscale on single grains or islands.
Atomic Force Microscopy (AFM) offers a platform for the simultaneous characterization of multiple properties of 2D materials. AFM allows to determine the structural conformation and growth of 2D materials and probe their local electrical response. We used AFM to perform this kind of correlative microscopy on MoS2 layers grown onto sapphire via Metal Organic Chemical Vapor Deposition (MO-CVD). The morphological and electrical properties of samples with different thickness were studied and compared by using Conductive AFM.
It is known that water contamination strongly affects the properties of MoS2, because it leads to a p-doping of the material. In order to assess the effect of water on the conductive properties of MoS2, AFM measurements were done both in air and in high vacuum using a Park HiVac AFM system. The vacuum allows to get rid of the water layer naturally present on the top of the sample in ambient conditions. Results showed a larger local conductivity in vacuum with respect to air. Moreover, conductivity maps in vacuum showed an increased sensitivity with respect to measurements in air, allowing to determine boundaries between different conductive grains.
The ability of AFM to resolve electrical properties at nanoscale and the current advancement of the AFM technology, which allows integrating these characterization tools into the semiconductor manufacturing process, make AFM the ideal platform for the study of these 2D semiconductor materials.

Primary authors: BOURRELLIER, Romain (Park Systems); LEFEVRE, Matthew (Park Systems)

Co-authors: LUDWIG, Jonathan (IMEC); HERMES, Ilka (Park Systems); MASCARO, Marco (IMEC); UMBERTO , Celano (IMEC); VANDERVORST, Wilfried (IMEC); PAREDIS, Kristof (IMEC)

Presenters: BOURRELLIER, Romain (Park Systems); LEFEVRE, Matthew (Park Systems)

Session Classification: Best poster contribution award

Track Classification: Materials and Engineering

Contribution ID: **10** Type: **not specified**

SINE2020: how a European project has provided access to neutron measurement techniques for various industrial sectors

Thursday, 28 November 2019 16:30 (2 hours)

Europe has many large instruments open to researchers from all over the world, whether they are involved in public or private research. However, it is rare for manufacturers to use these instruments. There are many reasons for this: the first is the lack of knowledge of these large scale infrastructures. Aware of the societal importance of these infrastructures, in particular for the innovation and the competitiveness of its industries, the European Commission has introduced in its framework programmes (FP7 and Horizon2020) a section dedicated to promoting the use of these large-scale instruments for the benefit of European Industry.
SINE2020 is a four-year project that was funded by the Horizon 2020 program and that has just ended in September 2019. In this programme, priority has been given to raise awareness among industrialists about neutron techniques, in particular by proposing feasibility studies.
The poster will present the approach adopted by SINE2020 to promote the use of neutrons and the results obtained through diagrams.

Primary authors: BOUDOU, Caroline (Institut Laue-Langevin); THIRY, Marc (Helmholtz Zentrum Geesthacht)

Presenter: BOUDOU, Caroline (Institut Laue-Langevin)

Session Classification: Best poster contribution award

Track Classification: Materials and Engineering

Contribution ID: **11** Type: **not specified**

Through thickness non-destructive residual stress-mapping on 6 mm thick Al-plates with neutron diffraction

Thursday, 28 November 2019 16:30 (2 hours)

While x-ray diffraction is widely used to non-destructively screen residual stresses at the surface, deeper investigations are often carried out in a destructive manner. The most popular techniques are the contour method and deep hole drilling. Neutron diffraction offers the unique possibility to map the whole stress tensor in the bulk and near the surface of a given component. Penetration depth reaches for instance: 300 mm in aluminium, 60 mm in steel, 70 mm in titanium and 40mm in nickel at the SALSA instrument of the Laue-Langevin Institute. Thanks to the particular set up of the SALSA instrument, a precise gauge volume is defined. Thus, near-surface measurement is possible from about 40-100 µm from the surface into the bulk.
We present here an initial work started with OHB-System company regarding friction-stir welds of aluminium. OHB System Company is one of the leading space company in Europe, delivering satellites and high-tech components for the space sector.
Surface to bulk residual stresses from friction stir welded Al plates of 6 mm thick were investigated. Measurement points were taken starting from about 200 µm below the surface to 3 mm in depth with a 150 µm step (gauge volume of 0.6x0.6x2 mm3).
We will show profiles and mapping of residual stress across the weld line and through the plate thickness. High tensile longitudinal stresses at the weld seams were identified that compares well with a study carried out by NASA using a destructive technique (Hatamleh, 2007).

Primary authors: BOUDOU, Caroline (Institut Laue-Langevin); PIRLING, Thilo; CABEZA, Sandra; MULLER, Axel Reimer

Presenter: BOUDOU, Caroline (Institut Laue-Langevin)

Session Classification: Best poster contribution award

Track Classification: Materials and Engineering

Contribution ID: **12** Type: **not specified**

InnovaXN : a new PhD programme at ILL and ESRF

Thursday, 28 November 2019 16:30 (2 hours)

InnovaXN, the Doctoral programme for innovators with X-rays and neutrons, is an innovative, new, doctoral training programme that provides an exceptional training opportunity for 40 students. Focussing on cutting-edge research projects of industrial relevance, the students will be immersed in the thriving, international, research environment of the European Synchrotron Radiation Facility (ESRF, www.esrf.eu), Europe's flagship synchrotron-based light source, and the Institut Laue Langevin (ILL, www.ill.eu), the world's most intense continuous source of neutrons together with dynamic industrial partners for the research topics. These two facilities are arguably the leading facilities of their kind in the world. Of the seven principles that define an innovative Doctoral Programme, four are highly developed by the facilities - research excellence, attractive institutional environment, interdisciplinary research and international networking – while two more will be significantly enhanced - exposure to industry and transferable skills. Innovation for European industry is the central theme of the programme.

Direct, proprietary use of beam time at ESRF and ILL does not exceed 1% of overall capacity. It is a strategic goal of our facilities to develop direct and indirect use by industry, based on the added value of the combination of neutrons and X-rays, therefore enhancing our contribution to the European innovation-driven economy. The InnovaXN programme will be a crucial component in catalysing this development and providing highly-trained early stage researchers to work at the interface with and in European Industry.

InnovaXN is a five-year programme. Recruitment of the 40 PhD students will be achieved through two recruitment calls: February 2020 and February 2021. InnovaXN PhD projects have to be built in cooperation with ILL and ESRF scientists.

Primary authors: BOUDOU, Caroline (Institut Laue-Langevin); Prof. MITCHELL, Edward (European Synchrotron)

Presenter: BOUDOU, Caroline (Institut Laue-Langevin)

Session Classification: Best poster contribution award

Track Classification: Materials and Engineering

Contribution ID: **13** Type: **not specified**

Physics-based analytical modeling of AlGaN/GaN HEMT using gate field-plate technology for high-frequency applications

Thursday, 28 November 2019 16:30 (2 hours)

The current trend is to fabricate (GaN) based devices due to the high energy gap, high breakdown field, and saturation velocity of gallium nitride for high-power amplifiers and high-frequency applications. This paper presents a newly developed compact model for input- output gate field-plated (FP) HEMT based on AlGaN/GaN heterojonction taking into account the effects of spontaneous and piezoelectric polarizations on sheet carrier concentration.
The proposed device incorporates a spacer layer of AlN to counter the decrease in mobility due to increasing 2-DEG (Two-Dimensional Electron Gas). Results showed that optimized FP design allows to considerably decreasing an electric field peak near gate edge towards drain electrode which enhance the breakdown voltage and decrease the reverse leakage current of HEMT devices. The proposed model provides the complete set of analytical equations that relate the physical design parameters to the electrical characteristics of the proposed device for high frequency, high-voltage and high-power applications such as radar and wireless communication systems.

Primary authors: KADDECHE, MOURAD (Université de Djilali Bounaâma- Khemis miliana, Ain Defla, 44225 Algeria); TELIA, AZZEDINE (2LMI, Département d'électronique, Université de Constantine1, Alegria); SOLTANI, ALI (Université des Sciences et Technologie de Lille, Cité Scientifique 59655 Villeneuve- France)

Presenter: KADDECHE, MOURAD (Université de Djilali Bounaâma- Khemis miliana, Ain Defla, 44225 Algeria)

Session Classification: Best poster contribution award

Track Classification: Micro- & nano-electronics

Contribution ID: **14** Type: **not specified**

Physical analysis workflow in context of GaN HEMT failure analysis.

Thursday, 28 November 2019 09:45 (23 minutes)

This talk reports the workflow developed to characterize AlGaN/GaN high electron mobility transistors (HEMTs) gate defects in order to link physical defects with their electrical signature. Taking into account the particularities of GaN technologies such as the thin active layer and the interface quality importance, we correlated different technics ranging from «Slice&View» to Transmission Electron Microscopy (TEM) and EDS-EELS mapping to identify defects with their electrical signature.

Presenter: Dr DEMONCHAUX, Thomas (SERMA Technologies)

Session Classification: Industrial sessions: Keynote Speakers

Track Classification: Micro- & nano-electronics

Contribution ID: **15** Type: **not specified**

Contribution of synchrotron radiation to the progress of an industrial process: SmartCut example

Thursday, 28 November 2019 10:08 (22 minutes)

Synchrotron radiation has become a very important tool in applied research because of its unique properties and capabilities. In this talk, these features are studied in the improvement of the Smart-Cut Process used by Soitec.

Primary author: Dr KONONCHUK, Oleg (Soitec)

Co-author: Dr RIEUTORD, Francois (CEA-Grenoble INAC)

Presenters: Dr RIEUTORD, Francois (CEA-Grenoble INAC); Dr KONONCHUK, Oleg (Soitec)

Session Classification: Industrial sessions: Keynote Speakers

Track Classification: Micro- & nano-electronics

Contribution ID: **16** Type: **not specified**

Investigating fuel cells and stacks using neutron and synchrotron radiation

Thursday, 28 November 2019 10:30 (23 minutes)

Primary author: Dr MORIN, Arnaud (CEA-Liten)

Presenter: Dr MORIN, Arnaud (CEA-Liten)

Session Classification: Industrial sessions: Keynote Speakers

Track Classification: Energy

Contribution ID: **17** Type: **not specified**

X ray tomography as a powerfull tool to probe the lithium metal plating/stripping processus : a key for the battery of tomorrow.

Thursday, 28 November 2019 10:53 (22 minutes)

Primary author: DEVAUX, Didier (CNRS)

Co-author: BOUCHET, Renaud (LEPMI UMR 5279-Grenoble INP)

Presenter: DEVAUX, Didier (CNRS)

Session Classification: Industrial sessions: Keynote Speakers

Track Classification: Energy

Contribution ID: **18** Type: **not specified**

DiamFab: electronic grade diamond epitaxial layers, not only for electronic!

Thursday, 28 November 2019 11:15 (25 minutes)

Power electronics are at the heart of our modern society, from every node of the energy distribution grid to your vehicles. Highest efficiency, reliability, and space-saving are required for such applications. Silicon has been widely used in power electronics but shows now its limitation to follow the trend imposed by the power electronics industry. Like so, wide bandgap semiconductors will gradually replace silicon. Among them, diamond, thanks to its superlative properties, is considered as the ultimate semiconductor.
As part of all the industrial processes needed to fabricate a diamond device, the epitaxial layer growth is one of the most critical since most of the electrical performances will depend on the quality of these active layers. Pushed by mechanical application and jewelry, substrates are commercially available and the device fabrication process relies on the traditional process. Conversely, the diamond epitaxy step is highly specific and requires strong experiences in diamond growth. By working on epitaxial diamond growth for more than 20 years, we have acquired unique know-how that allows DiamFab to grow diamond layers with overstanding features:
- accurate doping level and thickness
- wide range of boron doping level going from almost insulating material (1014 cm-3) to metallic conduction diamond (> 5x1020 cm-3)
- stack of different layers necessary to fabricate unipolar devices
- original doping profile also possible thanks to a well-controlled growth rate (delta doping for instance).
Electronic applications such as diodes and transistors manufacturing are extremely demanding from a material point of view. Moreover, our electronic grade diamond layers are highly suitable for other applications such as high energy detectors and others.

Primary author: CHICOT, Gauthier (DiamFab)

Presenter: CHICOT, Gauthier (DiamFab)

Session Classification: Industrial sessions: Keynote Speakers

Track Classification: Materials and Engineering

Contribution ID: **19** Type: **not specified**

Porosity closure in aluminum thick plates for aerospace

Thursday, 28 November 2019 11:40 (25 minutes)

Primary author: MAS, Fanny

Presenter: MAS, Fanny

Session Classification: Industrial sessions: Keynote Speakers

Track Classification: Materials and Engineering

Contribution ID: **20** Type: **not specified**

Accelerating research, development and production of advanced materials through characterization of structure at the nano-scale

Thursday, 28 November 2019 12:05 (25 minutes)

Primary author: HØGHØJ, Peter (Xenocs SAS)

Presenter: HØGHØJ, Peter (Xenocs SAS)

Session Classification: Industrial sessions: Keynote Speakers

Track Classification: Materials and Engineering

Contribution ID: **21** Type: **not specified**

Advanced Imaging : Neutron tomography and radiography, Principles and applications

Thursday, 28 November 2019 14:00 (30 minutes)

Primary author: TENGATTINI, Alessandro

Presenter: TENGATTINI, Alessandro

Session Classification: Advanced Imaging

Contribution ID: **22** Type: **not specified**

Advanced imaging: Synchrotron X-ray Diffraction Imaging

Thursday, 28 November 2019 15:30 (30 minutes)

Primary author: Dr BARUCHEL, Jose (ESRF)

Presenter: Dr BARUCHEL, Jose (ESRF)

Session Classification: Advanced Imaging

Contribution ID: **23** Type: **not specified**

Structure and Interface: X-ray surface diffraction (XRD) - 3D RSM

Thursday, 28 November 2019 14:00 (40 minutes)

X-ray surface diffraction (XRD)
Case: 3D Reciprocal Space Mapping (3D RSM)

Primary authors: Dr RENEVIER, Hubert (Grenoble INP); NGUYEN, Thanh Tra

Presenters: Dr RENEVIER, Hubert (Grenoble INP); NGUYEN, Thanh Tra

Session Classification: Tutorial session: Structure and Interfaces

Contribution ID: **24** Type: **not specified**

Structure and Interface:Synchrotron X-ray reflectivity (XRR) Neutron reflectivity (NR)

Thursday, 28 November 2019 15:50 (40 minutes)

15h50 - Synchrotron X-ray reflectivity (XRR) Neutron reflectivity (NR)

Dr. Tra Nguyen (CEA-Leti)
Dr. M. Letiche (ILL)

Primary authors: LETICHE, Manon (ILL); NGUYEN, Thanh Tra

Presenters: LETICHE, Manon (ILL); NGUYEN, Thanh Tra

Session Classification: Tutorial session: Structure and Interfaces

Contribution ID: **25** Type: **not specified**

Chemical Characterisation - X-ray flurorescence (XRF, nano-XRF and TXRF)

Thursday, 28 November 2019 14:00 (30 minutes)

14h00 - X-ray flurorescence (XRF, nano-XRF and TXRF)
Dr. J. Segura (ESRF)

Primary author: Dr SEGURA, Jaime (ESRF)

Presenter: Dr SEGURA, Jaime (ESRF)

Session Classification: Tutorial session: Chemical characterisation

Contribution ID: **26** Type: **not specified**

Chemical Characterisation: EDX, electron techniques

Thursday, 28 November 2019 15:30 (30 minutes)

15h30 -
Dr. Eric Robin (CEA-IRIG)

Primary author: ROBIN, eric (CEA)

Presenter: ROBIN, eric (CEA)

Session Classification: Tutorial session: Chemical characterisation

Contribution ID: **27** Type: **not specified**

Advanced Imaging: Synchrotron X-ray micro- and nano-computed tomography, Principle and applications

Thursday, 28 November 2019 14:30 (30 minutes)

Primary author: Dr BOLLER, Elodie (ESRF)

Presenter: Dr BOLLER, Elodie (ESRF)

Session Classification: Advanced Imaging

Contribution ID: **28** Type: **not specified**

Advanced Imaging: Electron Microscopy

Thursday, 28 November 2019 16:00 (30 minutes)

FIB-SEM tomography and other techniques

Primary author: ROUVIERE, Jean-Luc (CEA-UGA)

Presenter: ROUVIERE, Jean-Luc (CEA-UGA)

Session Classification: Advanced Imaging

Contribution ID: **29** Type: **not specified**

Structure and Interfaces: Non-destructive stress scanning using X-rays and neutrons

Thursday, 28 November 2019 14:40 (40 minutes)

Dr. T. Pirling (ILL) Dr. T. Buslaps (ESRF)

Primary authors: PIRLING, Thilo; Dr BUSLAPS, Thomas (ESRF)

Presenters: PIRLING, Thilo; Dr BUSLAPS, Thomas (ESRF)

Session Classification: Tutorial session: Structure and Interfaces

Contribution ID: **30** Type: **not specified**

X-ray Absorption Spectroscopie (EXAFS, XANES, etc.)

Thursday, 28 November 2019 14:30 (30 minutes)

Primary author: Dr LOMACHENKO, Kiril (ESRF)

Presenter: Dr LOMACHENKO, Kiril (ESRF)

Session Classification: Tutorial session: Chemical characterisation

Contribution ID: **31** Type: **not specified**

Chemical characterisation: XPS and SIMS

Thursday, 28 November 2019 16:00 (30 minutes)

Primary author: RENAULT, Olivier (CEA)

Presenter: RENAULT, Olivier (CEA)

Session Classification: Tutorial session: Chemical characterisation

Contribution ID: **32** Type: **not specified**

Visite CTMC - Grenoble INP

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Session Classification: Visites