



# ITFPC07

Innovations on Thin Films  
Processing and Characterisation

**NANCY** (FRANCE)

**NOVEMBER 20-23, 2007**



## FIRST CIRCULAR AND CALL FOR PAPERS

Deadline **July 9<sup>th</sup>, 2007**

[www.vide.org/itfpc07.html](http://www.vide.org/itfpc07.html)

### SCIENTIFIC TOPICS

THIN FILMS PROCESSING AND SURFACE ENGINEERING  
SIMULATION AND THIN FILMS CHARACTERISATION  
PROTECTIVE APPLICATIONS OF THIN FILMS  
ENERGY AND ENVIRONMENT APPLICATIONS OF THIN FILMS  
MICRO AND NANOSYSTEMS  
NEW MATERIALS AND HEALTH APPLICATIONS OF THIN FILMS

### ORGANISED AND SPONSORED BY:

■ Société Française du Vide, France ■ Nancy Université, France



Société Française du Vide - 19, rue du Renard - 75004 Paris

Phone: +33 (0)1 53 01 90 30 - Fax: +33 (0)1 42 78 63 20 - mail: [sfv@vide.org](mailto:sfv@vide.org) - [www.vide.org](http://www.vide.org)

# COMMITTEES

## Chairpersons

**Stéphane ANDRIEU** (LPM, Nancy, France)

**Mohammed BELMAHI** (LPMIA, Nancy, France)

**Thierry CZERWIEC** (LSGS, Nancy, France)

## International Scientific Committee

**Salah AIDA** (LCMI, Constantine, Algeria)

**José María ALBELLA MARTÍN**  
(CSIC, Madrid, Spain)

**Patrick ALNOT** (LPMIA, Nancy, France)

**Fernando ALVAREZ**  
(Inst. de Física, Unicamp, Brasil)

**Thierry BELMONTE** (LSGS, Nancy, France)

**Alain BILLARD** (LERMPS, Montbéliard, France)

**Pascal BRAULT** (GREMI, Orléans, France)

**Albano CAVALEIRO** (ICEMS, Coimbra, Portugal)

**Patrick CHOQUET** (ARCELOR Research, Belgium)

**Marie-Paule DELPLANCKE**  
(ULB, Brussels, Belgium)

**Abdou DJOUADI** (IMN, Nantes, France)

**Chuang DONG** (Mmlab, Dalian, China)

**Jean-Marie DUBOIS** (LSG2M, Nancy, France)

**Elizabeth GROSSE-BAUER** (LSGS, Nancy, France)

**Ken HAENEN** (IMO, Hasselt, Belgium)

**Rafael JIMENEZ RIOBOO** (CSIC, Madrid, Spain)

**François LE NORMAND**  
(IPCMS, Strasbourg, France)

**Edward MAC RAE** (LCSM, Nancy, France)

**Henri-Noël MIGEON** (CRPGL, Luxembourg)

**Eric MILLON** (GREMI, Orléans, France)

**Pierre MULLER** (CRMCN, Marseille, France)

**Fabienne PONCIN-EPAILLARD**  
(LPCI, Le Mans, France)

**Frédéric SANCHETTE** (CEA, Grenoble, France)

**Etienne SNOECK** (CEMES, Toulouse, France)

**Dmitry V. SHTANSKY** (MISA, Moscow, Russia)

**G. SUNDARARAJAN** (ARCI, Hiderabad, India)

**Laurent THOMAS** (PROMES, Perpignan, France)

**Eric THOMASELLA** (LMI, Clermont-Ferrand, France)

**Philippe VERNOUX** (IRCELYON, Lyon, France)

## Steering Committee

**Badreddine ASSOUAR** (LPMIA, Nancy, France)

**Jean-Philippe BAUER** (LSGS, Nancy, France)

**Jamal BOUGDIRA** (LPMIA, Nancy, France)

**Valérie DEMANGE** (LSGS, Nancy, France)

**Omar ELMAZRIA** (LPMIA, Nancy, France)

**Vincent FOURNEE** (LSG2M, Nancy, France)

**Gérard HENRION** (LSGS, Nancy, France)

**Gweltaz HIREL** (SFV, Paris, France)

**Henri MICHEL** (LSGS, Nancy, France)

**François MONTAIGNE** (LPM, Nancy, France)

**Michel REMY** (SFV, Paris, France)

**Hervé RINNERT** (LPM, Nancy, France)

**Michel VERGNAT** (LPM, Nancy, France)

**Brigitte VIGOLO** (LCSM, Nancy, France)

**Michel VILASI** (LCSM, Nancy, France)

## Conference Secretariat

**SFV** (Société Française du Vide) - 19 rue du Renard - 75004 Paris - France

Phone: +33 (0)1 53 01 90 30 - Fax: +33 (0)1 42 78 63 20 - Email: [sfv@vide.org](mailto:sfv@vide.org)



## SCOPE

The third international conference on Innovations on Thin Films Processing and Characterisation ITFPC 07 is, due to its success story, the continuation of the French speaking IEACM conference (Innovations dans l'Elaboration et les Applications des Couches Minces). It will be held from Tuesday November 20<sup>th</sup> to Friday November 23<sup>rd</sup> 2007 in Nancy (France).

The conference is organised by the French Vacuum Society (Société Française du Vide) and many research teams from the institute Jean Lamour of Nancy Université. A lot of researchers from many countries are participating to the scientific and organisation committees.

A great progress in thin films processing have been made in research, development and fonctionnalisation of surfaces making this area one of the most potential field of applications in microelectronics, nanotechnology, mechanics, optics, photonics, chemistry, biology, medicine...

The aim of ITFPC 07 conference is to provide an open forum to discuss on progress of thin films processing and engineering like the growth and etching, including CVD and PVD processes. The participants should contribute to the diffusion of the state of the art and a perspective of scientific and technological achievement in thin films elaboration, characterisation, functional surface treatment and applications.

In addition, the exhibition held during the conference will cover a large field of equipments and new developments in thin films processing including vacuum equipments, elaboration and characterisation systems.

## SCIENTIFIC TOPICS

### 1. THIN FILMS PROCESSING AND SURFACE ENGINEERING

- Growth and etching of thin films
- Laser, ion and electron beams processing
- Electrodeposition
- Epitaxy
- Plasmas processes
- PVD, CVD and hybrid techniques
- Thermochemical treatment
- Sol-gel

### 2. SIMULATION AND THIN FILMS CHARACTERISATION

- Characterisation techniques
- Mechanical and tribological properties
- Nano-scale characterisation
- Large instruments facilities
- Surface engineering simulation

### 3. PROTECTIVE APPLICATIONS OF THIN FILMS

- Barrier coatings
- Hard, super hard and tough coatings
- Diffusion layers
- Fatigue, wear
- Corrosion and oxidation resistance

### 4. ENERGY AND ENVIRONMENT APPLICATIONS OF THIN FILMS

- Catalysis
- Energy and environment
- Ionic conductors
- Solar and fuel cells

### 5. MICRO AND NANOSYSTEMS

- Devices: actuators, sensors...
- Bottom up: self organisation, supramolecular chemistry
- Top down: etching, lithography, nanoprint
- Specific properties of nanostructures

### 6. NEW MATERIALS AND HEALTH APPLICATIONS OF THIN FILMS

- New materials with specific properties for electronics, optics, thermoelectrics, biological and biomedical applications
- Heterostructures, composites, hybrid systems
- Thin films of complex structures
- New structures obtained thanks to thin film synthesis technologies
- Safety and health

## INVITED SPEAKERS (Provisional)

**Pierre Muller** - CRMCN, Marseille, France  
Elasticity effects in crystal growth

**Topic 1: Nadhira Laidani** - ITC-IRST, Povo, Italy  
Synthesis and characterisation of carbon-based films for gas permeation barriers

**Topic 2: Ernest Bauer** - IBM Research Division, New York, USA  
Low energy and photo emission electron microscopy and related technique for thin films analysis

**Topic 3: Asuncion Fernandez** - ICMS, Sevilla, Spain  
Preparation, microstructural characterisation and tribological behaviour of  $CN_x$  coatings

**Topic 4: Stéphanie Roualdes** - IEM, Montpellier, France  
Plasma thin films as new materials for miniature fuel cells

**Topic 5: Renaud Bachelot** - LNIO, Troyes, France  
Polymer thin film nanostructuration by localized surface plasmon: optical properties control of new hybrid metal/polymer nanoparticles

**Topic 6: François Rossi** - IHCP, Ispra, Italy  
Low pressure plasma discharges in nanobiotechnology

## COURSES

### Thin film growth technology

**Laurent Le Brizoual** – LPMIA, Nancy Université - CNRS, Nancy (France)

Thin films technology is involved in many applications, including microelectronics, optics, magnetic, hard and corrosion resistant coatings, micro-mechanics, etc... The lecture will recall the basic aspects of thin films growth by various technologies. We show general characteristics of various depositions equipments and particularly conventional plasma systems such as planar RF magnetron, high density systems or microwave plasma system.

### Transmission electron microscopy of thin films and coatings

**Valérie Demange** – LSGS, Nancy Université - CNRS, Nancy (France)

The course deals with information obtainable from transmission electron microscopy in the field of thin films and coatings. Topics include: specimen preparation, structure, microstructure, growth, texture, defects, epitaxy.

### Thin films and synchrotron

**Karine Dumesnil** – LPM, Nancy Université - CNRS, Nancy (France)

The photon flux now available in the synchrotron radiation sources makes the synchrotron techniques highly suitable to the study of thin films, surfaces and of specific micrometer size area. The aim of this tutorial is to give an overview of the main techniques, based on X-ray absorption and X-ray scattering by the matter, used for the investigation of thin films structural and electronic properties. Selective examples will illustrate these various aspects.

### Elastic and mechanical properties. Brillouin spectroscopy

**Rafael J. Jiménez Riobóo** - Instituto de Ciencia de Materiales de Madrid (CSIC), Madrid (Spain)

The Brillouin Spectroscopy is a light scattering experimental method, non destructive and with no physical contact, to obtain the information concerning the acoustic waves and thus the elastic and mechanical properties of condensed matter. An introduction to the Brillouin Spectroscopy will be done from a basic point of view as well as from a technical one. Examples of Brillouin experiments on thin films will be presented too.

# REGISTRATION FORM

Registration on [www.vide.org/itfpc07.html](http://www.vide.org/itfpc07.html)

## Identity

Name: ..... First Name: .....

Company: .....

Department: ..... Job title: .....

Company Address: .....

.....

Zip Code: ..... City: ..... Country: .....

E-mail: .....

Phone: ..... Fax: .....

I am a candidate for a publication in the European Physical Journal - Applied Physics (EPJ-AP).

**Deadline for submission: Friday, November 2<sup>nd</sup> 2007.**

## Fees

Short courses

SFV member: 140 €       Non-SFV member: 210 €       Student: 100 €

Colloquium

SFV member: 250 €       Non-SFV member: 320 €       Student: 150 €

One-day colloquium: 100 € day: .....

Courses & Colloquium

SFV member: 350 €       Non-SFV member: 420 €       Student: 220 €

*Additional charges for registration after October 20<sup>th</sup>, 2007: 50 €*

## Payment

by enclosed check (to the order of SFV) .....€

by bank transfer

BRED - Paris Hôtel de Ville - 33, rue de Rivoli - 75004 Paris - France

IBAN: FR76 1010 7001 7700 5212 4261 750

SWIFT: BREDFRPP

BIC: BREDFRPPXXX

on arrival       by cash       by credit card       by check

please, send me an invoice in ..... copies to (if address is different)

.....

.....

Date:

Signature:

**To be returned to SFV** (Société Française du Vide)

19 rue du Renard - 75004 Paris - France

Phone: +33 (0)1 53 01 90 30 - Fax: +33 (0)1 42 78 63 20 - [sfv@vide.org](mailto:sfv@vide.org)

# INDUSTRIAL FORM

## Registration on [www.vide.org/itfpc07.html](http://www.vide.org/itfpc07.html)

I intend to rent an exhibition area (including a 1 minute oral talk)

1 table, 2 chairs, 2 panels, an electrical connection and wi-fi access.

800 €

I require technical document distribution

Equipment makers and users will have the opportunity to insert their brochures or technical documentation in the participants' bag.

400 €

### Identity

Name: ..... First Name: .....

Company: .....

Department: ..... Job title: .....

Company Address: .....

Zip Code: ..... City: ..... Country: .....

E-mail: .....

Phone: ..... Fax: .....

### Payment

by enclosed check (to the order of SFV) .....€

by bank transfer

BRED - Paris Hôtel de Ville - 33, rue de Rivoli - 75004 Paris - France

IBAN: FR76 1010 7001 7700 5212 4261 750

SWIFT: BREDFRPP

BIC: BREDFRPPXXX

on arrival       by cash       by credit card       by check

please, send me an invoice in ..... copies to (if address is different)

Date:

Signature:

To be returned to SFV (Société Française du Vide)

19 rue du Renard - 75004 Paris - France

Phone: +33 (0)1 53 01 90 30 - Fax: +33 (0)1 42 78 63 20 - [sfv@vide.org](mailto:sfv@vide.org)



## GENERAL INFORMATION

Nancy is an old town, known all over the world and has a particularly rich architectural heritage of the XVIII<sup>e</sup> century. It is considered as a magnificent example of classical french architecture. The Place Stanislas is one of the most beautiful royal squares in Europe, with its famous buildings surrounding the square including the City Hall, the Theatre-Opera House, the Fine Arts Museum...

### ACCESS:

#### By car ([www.mappy.fr](http://www.mappy.fr))

From Paris or Strasbourg: highway A4

#### By rail ([www.voyages-sncf.com](http://www.voyages-sncf.com))

The TGV EST - Eastern France-Europe high speed train - will start serving Nancy in the summer of 2007. The journey time to and from Paris will be reduced to 90 minutes (<http://www.tgvseuropeen.com>).

#### By plane

Metz-Nancy Lorraine Regional Airport - Phone: +33 (0) 3 87 56 70 00 (<http://www.metz-nancy-lorraine.aeroport.fr>). Only 28 miles north of Nancy on the A31 highway: A frequent shuttle bus runs to and from Nancy (timetables on the Airport website).

### ITFPC 2007 venue:

#### Université Henri Poincaré - Nancy I - Faculté des Sciences et Techniques

Amphi 8 - Boulevard des Aiguillettes - 54500 Vandœuvre-lès-Nancy

Phone: +33 (0)3 83 68 49 25 – Fax: +33 (0)3 83 68 49 33

Easily accessible from the centre town by transport, line of tram N° 1, stop “Vélodrome”.

#### By car

From PARIS (A4) or METZ (A31): A31 exit 19: VILLERS NANCY and follow the “Boulevard des Aiguillettes” to the “Carrefour du Vélodrome”.

### REGISTRATION:

#### Short courses:

A half-day short courses will be organised on Tuesday, November 20<sup>th</sup>.

#### Colloquium

From Tuesday, November 20<sup>th</sup> at 2pm to Friday, November 23<sup>rd</sup> at noon. Fees include the access to all the oral and posters sessions, the abstract booklet, breaks, conference dinner. For students, please provide a copy of your 2007/2008 student card. More information and registration on our web site: [www.vide.org/itfpc07.html](http://www.vide.org/itfpc07.html).

### PUBLICATION:

One page summaries of submitted papers will be published in the SFV abstract booklet, with the program and given to all the participants for the opening of the colloquium.

# ITFPC 07

## CALL FOR PAPERS

Deadline

**July 9<sup>th</sup>, 2007**



Papers of keynote lectures, oral communications and posters will be published in the ITFPC 2007 abstract booklet.

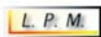
Please send to SFV by mail [sfv@vide.org](mailto:sfv@vide.org) your one-page abstract before July, 9<sup>th</sup> 2007 including

- Your name, full address and e-mail
- The oral speaker
- The name and the address of your co-authors
- Your preference: oral or poster session

The Steering Committee will advise you since

**September, 21<sup>st</sup> 2007**

 **lorraine**  
conseil régional  
[www.cr-lorraine.fr](http://www.cr-lorraine.fr)

 L. P. M.

 SMIA

 L&S

 MEURTHE & MOSELLE

ville de Nancy.

 Grand  
nancy

Nancy-Université

 CNRS  
CENTRE NATIONAL  
DE LA RECHERCHE  
SCIENTIFIQUE

 sfv

Société Française du Vide - 19, rue du Renard - 75004 Paris

Phone: +33 (0)1 53 01 90 30 - Fax: +33 (0)1 42 78 63 20 - mail: [sfv@vide.org](mailto:sfv@vide.org) - [www.vide.org](http://www.vide.org)