

Program

Tuesday, may 14th

8H30—8H45 Introduction: Jean-Noël Aqua (INSP - Paris)

8H45—9H45 Plenary talk :

About the central role of materials exploration and crystal growth in advance and future electronic, photonic and quantum devices

Clément Merckling

IMEC – Leuven

Session I : Growth mechanisms

Chair : Jean-Noël Aqua (INSP – Paris)

9H45—10H30 Invited 1 :

Hybrid oxide MBE: possible pathway to achieve semiconductor grade complex oxide thin films?

Roman Engel-Herbert

Paul-Drude-Institute for Solid State Electronics, Berlin

10H30 – 11H00 Break

11H00 – 11H20 Graphene growth mechanisms during propane/hydrogen CVD on SiC

C. Mastropasqua^{1,2}, A. Michon², M. Paillet³, M. Portail², M. Koudia⁴, M. Abel³, I. Berbezier⁴, A. El Alouani²

(1) IM2NP, Marseille

(2) CRHEA, Sophia-Antipolis

(3) Laboratoire Charles Coulomb, Montpellier

11H20 – 11H40 In depth study of the growth mechanism of GaN nanowires by Si-assisted MOVPE

B. Alloing¹, J. Bosch¹, P. Vennéguès¹, L. Lymperakis¹

(1) CRHEA, Sophia-Antipolis

11H40 – 12H00 Nucléation, taille du noyau critique et distributions des zones de capture dans l'épitaxie des semiconducteurs : un aperçu de l'état de l'art

A. Pimpinelli¹

(1) Institut Pascal, Clermont-Ferrand

12H00 – 12H20 Modeling of InAs nanowire growth using a dual-atom diffusion-limited approach

D. Mosiats¹, Y. Genuist¹, J. Cibert¹, E. Bellet-Amalric², M. Hocevar¹

(1) Institut Néel, Grenoble

(2) CEA, PHELIQS, Grenoble

12H20 – 14H00 Lunch and free time

Session I : Growth mechanisms (continued)

Chair : Romain Bachelet (INL – Lyon)

14H00—14H45 **Invited 2 :**

Some mechanisms of III-V nanowire growth

Jean-Christophe Harmand, N. Hong, C. Wei, G. Patriarche, L. Travers, F. Oehler, F. Glas, F. Panciera, C. Tong, A. Scaccabarozzi, A. Catoni

C2N Palaiseau

14H45 – 15H05 Exploring the Impact of Thickness on Epitaxial Growth: A Comparative Study of (001) Oriented CeO₂ Thin Films on R-plane sapphire

E. Chaslin¹, Q. Simon¹, A. Borroto¹, M. Himdi¹, X. Castel¹

(1) IETR, Rennes

15H05 – 15H25 Epitaxial growth and characterization of Potassium Titanyl Phosphate isomorphous thin films by Pulsed Laser Deposition

A. Clavel¹, M. Salaün¹, B; Boulanger¹

(1) Institut Néel, Grenoble

15H25 – 15H45 Pioneer operando curvature stress measurement during BaTiO₃ thin film epitaxy by RF magnetron sputtering

C. Furgeaud¹, R. Rousseau¹, M. Bounab¹, P. Regreny¹, C. Botella¹, A. Danescu¹, R. Bachelet¹, G. Saint-Girons¹

(1) INL, Lyon

15H45 – 16H15 Break

16H15 – 16H55 Sponsor session

Chair : Jean-Baptiste Rodriguez (IES Montpellier)

16H15 – 16H35 In situ curvature measurement: a great breakthrough for MBE growth monitoring

A. Toujani¹

(1) RIBER SA

16H35 – 16H55 New FIB and Cryo FIB-SEM by JEOL

L. Vassé¹

(1) JEOL (EUROPE) SAS, 1 Allée de Giverny, 78290 Croissy-sur-Seine, France

AFTER DINNER : POSTER SESSION

Wednesday, may 15th

8H30—9H30 Plenary talk :

Epitaxy of III-V semiconductors: some challenges and evolutions

Eric Tournié

IES - Montpellier

Session II : Structural and functional characterization

Chair : Yvon Cordier (CRHEA – Sophia Antipolis)

9H30—10H15 Invited 1 :

How will electron spectromicroscopy reveal "all the secrets" of your oxides down to the atomic scale? ... at least their structural, chemical, and electronic features !

Laura Bocher

LPS - Orsay

10H15 – 10H45 Break

10H45—11H30 Invited 2 :

Characterisation of defects in wide bandgap semiconductors

Julien Barjon, C. Arnold, I. Stenger, A. Delteil, R. Gillet, S. Hassani, S. Roux, S. Gautam, M.A. Pinault-Thaury

GEMaC - Versailles

11H30 – 11H50 [Advanced optical flux monitoring to control thin layer deposition processes](#)

R. Rousseau¹, C. Botella¹, J. Morville¹, L. Berguiga¹, M. Bounab¹, C. Furgeaud¹, R. Bachelet¹, G. Saint-Girons¹

(1) INL, Lyon

11H50 – 12H10 [Electron Channeling Contrast Imaging for epi-layer structural defect characterization](#)

A. Gilbert¹, A. Meguekam¹, E. Tournié¹ and J.B. Rodriguez¹

(1) IES, Montpellier

12H10 – 12H30 [Electrically-driven antiferroelectric-ferroelectric phase transition in epitaxial PbZrO₃ thin films studied by in situ X-ray diffraction](#)

T. Cornelius¹, S. Matzen², T. Maroutian², C. Mocuta³, A. Zing², S. Escoubas¹, O. Thomas¹

(1) IM2NP, Marseille

(2) C2N, Paris-Saclay

(3) Synchrotron SOLEIL

12H30 – 14H00 Lunch and free time

Session III : Properties engineering using epitaxy

Chair : Maxime Hugues (CRHEA – Sophia Antipolis)

14H00—14H45 Invited 1 :

Stabilization of nickelate infinite-layer phase: from 'soft-chemistry' to 'soft-physics'

Daniele Preziosi

IPCMS - Strasbourg

14H45—15H30 Invited 2 :

Niobium nitride, a newcomer to the III-nitride semiconductor family: Epitaxy of metal/semiconductor, semiconductor/superconductor hybrid heterostructures

Fabrice Semond

CRHEA - Valbonne

15H30 – 16H00 Break

16H00 – 16H20 *Crafting the magnetic anisotropy in highly epitaxial CoV₂O₄ thin films*

L. El Khabchi¹, A. Peña Corredor¹, L. Schlur¹, M. Lenertz¹, J. Robert¹, C. Leuvrey¹, G. Versini¹, F. Roulland¹, D. Preziosi¹, C. Lefevre¹, N. Viart¹

(1) IPCMS, Strasbourg

16H20 – 16H40 *GaN/AlGaN quantum wells grown on bulk GaN substrate in the step-flow or step meandering regime, impact on indirect exciton diffusion*

B. Damilano¹, R. Aristegui¹, H. Teisseyre¹, S. Vézian¹, V. Guigoz¹, A. Courville¹, I. Florea¹, D. Lefebvre¹, P. Vennéguès¹, M. Bockowski¹, T. Guillet¹, M. Vladimirova¹

(1) CRHEA, Sophia-Antipolis

16H40 – 17H00 *Phase controlled epitaxy of wurtzite ZnS thin layers by MOCVD*

H. Melhem¹, V. Sallet², G. Amiri², T. Van den Berg¹, G. Hallais¹, G. Patriarche¹, N. Findling¹, L. Largeau¹, P. Hemme¹, C. Renard¹, L. Vincent

(1) C2N, Paris-Saclay

(2) UVSQ, Versailles

17H00 – 17H20 *Anisotropic strain-induced single multiferroicity in BiFeO₃ thin films*

A. Abdelsamie^{1,2}, P. Dufour¹, A. Finco², A. Chaudron¹, J. Fischer¹, N. Jaouen³, M. Viret⁴, K. Bouzheouane¹, V. Jacques², J.Y. Chauleau⁴, S. Fusil¹, V. Garcia¹

(1) Laboratoire A. Fert, CNRS-Thalès, Paris-Saclay

(2) Laboratoire C. Coulomb, Montpellier

(3) Synchrotron SOLEIL, Gif-sur-Yvette

(4) CEA-SPEC, Gif-sur-Yvette

AFTER DINNER : POSTER SESSION

Thursday, may 16th

8H30—9H30 **Plenary talk :**

The potential for enhanced functional properties offered by vertically aligned nano composite films

Judith MacManus-Driscoll

Cambridge University

Session IV : Hybridation

Chair : Nathalie Lemée (LPMC – Amiens)

9H30—10H15 **Invited 1 :**

Oxide nanosheets as seed layers for growth of complex oxides

F. Baudouin¹, A. Boileau², M. Dallochio², B. Bérini³, S. Ollivier¹, M. Chettab¹, S. Hurand⁴, A. David², U. Lüders², S. Députier¹, W. Prellier², M. Guilloux-Viry¹, Y. Dumont³, A. Fouchet², **Valérie Demange**¹

(1) Univ Rennes, CNRS, ISCR – UMR 6226, Rennes

(2) Normandie Univ, ENSICAEN, UNICAEN, CNRS, CRISMAT, Caen

(3) GEMaC, Université Paris-Saclay, UVSQ, CNRS, GEMaC UMR8635, 78035, Versailles, France

(4) Pprime, UPR 3346 CNRS-Université de Poitiers, Futuroscope-Chasseneuil

10H15 – 10H45 Break

10H45—11H30 **Invited 2 :**

III-V/Si epitaxial growth and antiphase domains: a matter of symmetry

Charles Cornet¹, S. P. Chandrasekharan¹, A. Gilbert², D. Gupta¹, P. Vennéguès³, F. Semond³, A. Ponchet⁴, L. Cerutti², L. Largeau⁵, G. Patriarche⁵, E. Tournié², P. Turban⁶, L. Pedesseau¹, N. Bertru¹, J.B. Rodriguez²

(1) Institut FOTON, Rennes

(2) IES, Montpellier

(3) CRHEA, Sophia-Antipolis

(4) CEMES, Toulouse

(5) C2N, Paris Saclay

(6) IPR, Rennes

11H30 – 11H50 **Strain-relieving mechanism in III-V semiconductors epitaxially grown on Silicon : misfit dislocation networks**

A. Gilbert¹, K. Graser², A. Trampert², M. Ramonda¹, E. Tournié¹, J.B. Rodriguez¹

(1) IES, Montpellier, (2) Paul-Drude-Institut für Festkörperelektronik

11H50 – 12H10 **Vers la localisation bas coût d'hétéroépitaxie de GaAs sur Si**

L. Dentz¹, C. Renard¹, F. Hamouda¹, G. Hallais¹, L. Vincent¹, D. Bouchier¹, E. Herth¹, T. Baptiste¹, L. Largeau¹, A. Jaffre², J.P. Connolly², D. Mencaraglia², L. Leroy¹

(1) C2N, Paris-Saclay, (2) LGEP, Paris-Saclay

12H10 – 12H30 **Local epitaxy via CNO nanosheets on glass : effect of thickness on the Vanadate TCO**

A. Fouchet¹, M. El rami¹, S. Hurand², U. Lüders¹, B. Berini³, A. David¹, C. Labbé⁴, J. Cardin⁴, M. Guilloux-Viry⁵, W. Prellier¹, Y. Dumont³, V. Demange⁵, A. Ruyter¹

(1) CRISMAT, Caen, (2) Institut Pprime, Poitiers, (3) GEMAC, Versailles, (4) CIMAP, Caen, (5) ISCR, Rennes

12H30 – 14H00 Lunch and free time

Session V : From properties to devices

Chair : Laurence Méchin (GREYC – Caen)

14H00—14H45 Invited 1 :

Scanning probe microscopy for functional oxide thin films

Vincent Garcia

Laboratoire Albert Fert, CNRS Thales - Palaiseau

14H45—15H30 Invited 2 :

Nitride nanowire light emitting diodes: from single wire properties to device applications

Maria Tchernycheva¹, N. Amador¹, S. Vézian², B. Damilano², J. Bosch², B. Alloing², J. Eymery³, C. Durand³

(1) C2N-CNRS, University Paris Saclay, 91120 Palaiseau, France

(2) CRHEA, Université Côte d'Azur, CNRS, 06560 Valbonne, France

(3) Université renoise Alpes, CEA, IRIG, PHELIQS, NPSC, 38000 Grenoble, France

15H30 – 16H00 Break

16H00 – 16H20 **Orientation dependence of functional properties in preferentially oriented Bi_{0.5}Na_{0.5}TiO₃-BaTiO₃ thin films**

H. Alaoui¹, A. Lahmar¹, O. Mlida², F. Ponchel³, A. Da Costa², F. Le Marrec¹, A. Ferri², A. Ysebaert¹, A. Cantaluppi¹, M. H. Chambrier², D. Remiens³, R. Desfeux², N. Lemée¹

(1) LPMC, Amiens

(2) UCCS, Lens

(3) IEMN, Valenciennes

16H20 – 16H40 **Ammonia source molecular beam epitaxy of ScAlN/GaN HEMT heterostructures**

Y. Cordier¹, C. Elias¹, S. Chenot¹, F. Bartoli¹, P. Vennéguès¹, M. Hugues¹

(1) CRHEA, Sophia-Antipolis

16H40 – 17H00 **Monolithic integration of GaAs based compounds on silicon platform for photonic and optoelectronic devices**

L. Mallet-Dida¹, M. Martin¹, J. Moeyaert¹, T. Baron¹, D. Mouloua¹, V. Letka¹, H. Hijazi¹, M. Chobe²

(1) LTM, Grenoble

(2) LETI, Grenoble

17H00 – 17H20 **InAs/Sn shadow junctions with upgraded superconducting properties**

A. Sharma¹, A.H. Chen², C. Dempsey³, A. Purkayastha¹, S. Tan⁴, C. Palmstrom³, S. Frolov¹, M. Hocevar²

(1) Department of Physics and Astronomy, University of Pittsburgh

(2) Institut Néel, Grenoble

(3) Electrical and Computer Engineering, University of California, Santa Barbara

(4) Department of Electrical and Computer Engineering, University of Pittsburgh

AFTER DINNER : POSTER SESSION

Friday, may 17th

Session V: From properties to devices (continued)

Chair : Thomas Maroutian (C2N - Paris)

8H30—9H15 **Invited 1 :**

Oxide thin films processing: some examples on how to take advantage of perovskite properties into devices

Guillaume Agnus, T.Maroutian, S. Matzen, P. Lecoeur

C2N - Palaiseau

9H15—10H00 **Invited 2 :**

Direct epitaxy of lasers on Si substrates: challenges and solutions

Maeva Fagot, D-A Diaz-Thomas, A. Gilbert, M. Ramonda, Y. Rouillard, A.N Baranov, J.B Rodriguez, E. Tournié and L. Cerutti

IES, Univ. Montpellier, CNRS, F-34000 Montpellier, France

10H00 – 10H30 Break

10H30 – 10H50 **Infrared GeSn photodetectors: new avenues in monolithic Si photonics**

S. Assali¹

(1) CEA, Grenoble

10H50 – 11H10 **Is SCAM a promising oxide material, or a scam?**

H. Teisseyre^{1,2,3}, T. Stefaniuk⁴, J. Suffczyński⁴, M. Wierzbowska², J. Z. Domagała¹, J.Kisielewski⁵, A. Kłos⁵, A. Korneluk⁴

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(2) Institute of High Pressure Physics Polish Academy of Sciences, Warsaw, Poland

(3) CRHEA, Sophia-Antipolis

(4) Faculty of Physics, University of Warsaw, Warsaw, Poland

(5) Łukasiewicz Research Network-Institute of Microelectronics and Photonics, Warsaw, Poland

11H10 – 11H30 **Hybrid CVD-MBE Er:Y2O3 thin films for on-chip quantum technologies**

A. Blin¹, A. Tallaire¹, D. Serrano¹, I. Balasa¹, P. Goldner¹, A. Kolar², A. Kamen², Q. Lin², X. Liu², T. Zhong²

(1) IRCP, Paris

(2) Pritzker School of Molecular Engineering at the University of Chicago

11H30 – 11H50 **Epitaxial Growth of Fe3O4 on ZnO(000±1) Substrates for All-Oxide Spintronic Devices**

I. Madaci^{1,2}, O. Popova³, P. Vennégues², M. Nemoz², B. Berini¹, C. Morhain², Y. Dumont¹

(1) GEMAC, Versailles

(2) CRHEA, Sophia-Antipolis

(3) IPR, Rennes

11H50 – 14H00 Lunch and departure

POSTER LIST

P1: Growth and ferroelectricity of GeTe thin films on nominal and vicinal silicon substrate

L. Meynier¹, F. Verducci¹, B. Croes¹, F. Cheynis¹, S. Curiotto¹, P. Müller¹, F. Leroy¹

(1) Aix Marseille Université, CNRS, CINAM, AMUTECH, Marseille, France

P2: Selective area growth of InGaAs and InGaN nanowires arrays by hydride vapour phase epitaxy

G. Avit¹, E. Chereau^{1,2}, E. Semlali¹, A. Sauvagnat¹, G. Gregoire¹, M. Zeghouane¹, J. Jridi³, C. Bougerol³, V. G. Dubrovskii⁴, E. Gil¹, R. R. Lapierre², A. Trassoudaine¹, Y. André¹

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(2) Department of Engineering Physics, McMaster University, Hamilton, Ontario, Canada, L8S4L7

(3) CNRS, Institut Néel, F-38042 Grenoble, France

(4) Faculty of Physics, St. Petersburg State University, St. Petersburg, Russia

P3: Growing SiGe nanowires with the hexagonal phase

H. Ameziane¹, H. Melhem¹, G. Patriarche¹, T. Van den Berg¹, G. Hallais¹, C. Renard¹, L. Vincent¹

(1) Université Paris-Saclay, CNRS, Centre de Nanosciences et de Nanotechnologies, 91120 Palaiseau, France

P4: Epitaxial V2O3 films by Reactive Magnetron Sputtering

J. Cordiez¹, V. Demange³, B. Corraze^{1,2}, M. Haydoura¹, Z. Khaldi¹, P. Béal¹, M. Guilloux-Viry³, J. Tranchant¹, M.P. Besland¹, L. Cario^{1,2}, E. Janod^{1,2}

(1) Nantes Université, CNRS, Institut des Matériaux de Nantes Jean Rouxel, IMN, F-44000 Nantes, France

(2) CNRS, Univ Rennes, DYNACOM (Dynamical Control of Materials Laboratory) – IRL2015, The University of Tokyo, 7-3-1 Hongo, Tokyo 113-0033, Japan

(3) Univ Rennes, CNRS, ISCR-UMR6226, ScanMAT-UAR2025, F-35000 Rennes, France

P5: CVD Growth of Graphene and Vanadium-Doped SiC for Quantum Hall Resistance Standards

A. El Alouani¹, C. Mastropasqua^{1,2}, M. Paillet³, M. Portail¹, Y. Cordier¹, B. Jouault³, S. Contreras³, M. Zielinski⁴, S. Juillaguet³, A. Michon¹

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(2) Aix-Marseille Université/CNRS, IM2NP, Marseille, France

(3) Université Montpellier 2/CNRS, L2C, Montpellier, France

(4) NovaSiC, 73370, Le Bourget-du-Lac, France

P6: Pulsed laser deposition of La₂/3Sr₁/3MnO₃ thin films: first experiments using a Nd-YAG laser

V. Pierron¹, G. Tarsi¹, J. Blond¹, B. Guillet¹, L. Méchin¹, S.K. Chaluvadi², S. Punathum Chalil^{2,3}, P. Rajak^{2,3}, P. Orgiani², N. Manca⁴, L. Pellegrino⁴, D. Marre⁴

(1) Normandie Univ, UNICAEN, ENSICAEN, CNRS, GREYC, 14000 Caen, France

(2) CNR-IOM Istituto Officina dei Materiali, S.S.14, km 163.5, I-34149 Trieste, Italy

(3) ICTP International Centre for Theoretical Physics, Strada costiera 34, I-34151 Trieste, Italy

(4) CNR-SPIN, Corso Ferdinando Maria Perrone, 24, 16152 Genova GE, Italy

P7: Exploring the epitaxial growth of superconducting β -Sn on Ge

S. Assali¹

(1) Université Grenoble Alpes, CEA Grenoble

P8: Growth and design of antiferromagnetic (LaVO₃)_m/(PrVO₃)_n superlattices

G. Masset¹, M. Martirosyan¹, M. Bugnet^{2,3}, J. Ghanbaja¹, S. Migot¹, L. Pasquier¹, Q.M. Ramasse², S. Andrieu¹, K. Dumesnil¹, and O. Copie¹

(1) Institut Jean Lamour, CNRS/Université de Lorraine (UMR 7198), F-54000 Nancy, France

(2) SuperSTEM Laboratory, SciTech Daresbury Campus, Daresbury, United Kingdom

(3) Univ Lyon, CNRS, INSA Lyon, UCBL, MATEIS, Villeurbanne, France

P9: Determination of the anisotropic dielectric function of epitaxial SrO(SrTiO₃)_n Ruddlesden-Popper structures (n=1,...5)

M. Bounab¹, C. Furgeaud¹, S. Cueff¹, R. Bachelet¹, M. Bouras^{1,2}, G. Saint-Girons¹

(1) INL-UMR520/CNRS, 36 avenue Guy de Collongue, 69134 Ecully cedex (France)

(2) Georgia Tech Lorraine (Georgia Tech-Europe), 2 Rue Marconi, 57070 Metz (France)

P10: Complex Oxides by Large Area Pulsed Laser Deposition

M. Rath and U. Lüders

(1) CRISMAT, 6 boulevard Maréchal Juin, 14000 Caen

P11: ELECTRIC AND PIEZOELECTRIC BEHAVIORS OF ZnO NWs GROWN BY MOCVD.

S. Hassani Said¹, G. AMIRI¹, C. SARTEL¹, P. CHRETIEN³, J. SCOLA¹, N. GOGNEAU² and V. SALLET¹

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(3) Université Paris Saclay, Central Supelec, Geeps, 3 Rue Joliot Curie, 91190 Gif-sur-Yvette, France

P12: Tailoring the metal-insulator transition of rare earth nickelates towards adaptive infrared camouflage

L. Matera^{1,2}, L. Divay², C. Galindo², P. Bortolotti², M. Bibes¹, L. Iglesias¹

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(2) Thales Research & Technology, Campus Polytech, 1 Avenue Augustin Fresnel, 91767 Palaiseau (France)

P13: Thermoelectric perovskite-oxide solid-solutions epitaxially-grown by MBE for on-chip thermal energy management

D. Han¹, M. d'Esperonnat¹, R. Moalla¹, M. Apreutsei¹, C. Botella¹, C. Furgeaud¹, A. Lamirand¹, M. Bugnet², J. Gazquez³, I. Fina³, P.O. Chapuis⁴, C. Adessi⁵, R. Debord⁵, V. Giordano⁵, S. Pailhès⁵, G. Saint-Girons¹ and R. Bachelet¹

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(5) ILM-CNRS, UMR5306, UCBL, 10 rue Ada Byron 69622 Villeurbanne cedex, France

P14: ZnO : from material growth to quantum cascade devices

M. Hugues¹, N. Le Biavan¹, D. Lefebvre¹, A. Jollivet², B. Hinkov³, B. Meng⁴, D. Stark⁴, M. Franckié⁴, H. Hoang³, S. Pirotta², M. Tchernycheva², J. Tamayo-Arriola⁵, M. Montes Bajo⁵, A. Hierro⁵, G. Strasser³, F. H. Julien², J. Faist⁴, and J.-M. Chauveau¹

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(3) TU-Wien, Nanocenter Campus-Gußhaus, Gußhausstraße 25, Gebäude-CH, A-1040 Vienna, Austria

(4) Institute for Quantum Electronics, ETH Zurich, Zurich 8093, Switzerland

(5) ISOM, Universidad Politécnica de Madrid, 28040 Madrid, Spain

P15: Kinetic Monte Carlo Simulation of Epitaxial Growth of 2D Si

K. Wang¹, G. Prévot¹ & J.N. Aqua¹

(1) Sorbonne Université, Centre National de la Recherche Scientifique, Institut des NanoSciences de Paris, INSP, 4, place Jussieu, 75005 Paris, France

P16: [MnO₂]^δ- 2D Oxides as Templates for Epitaxial Growth of Functional Oxide Films

S. Gaddour¹, S. Ollivier¹, S. Députier¹, L. Rault¹, C. Cochard¹, M. Guilloux-Viry¹, V. Demange¹

(1) Univ Rennes, CNRS, ISCR-UMR6226, ScanMAT-UAR2025, F-35000 Rennes, France

P17: Influence of the strain relaxation on the ferroelectric nanodomains in ferroelectric / dielectric superlattices

M. Gharbi¹, C. Davoisne², L. Dupont^{2,4}, F. Le Marrec¹ and N. Lemée¹

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