



07-31-2017

08:00 - 10:00 Plenary Session

Anasazi Ballroom

Moderation: K.T. Zawilski, Nashua, NH/US

08:00 - 08:00 THERMODYNAMIC CONSIDERATIONS FOR EPITAXIAL GROWTH OF III/

G. Stringfellow, Salt Lake City, UT/US

08:00 - 08:00 NEW HARD RADIATION DETECTION SEMICONDUCTOR MATERIALS

M. Kanatzidis, Evanston, IL/US

10:30 - 12:00 Fundamentals of Crystal Growth (1 of 9)

Anasazi Ballroom South

Moderation: P.G. Vekilov, US

10:30 - 11:00 WHAT DETERMINES A NUCLEATION PATHWAY?

Y. Kimura, Sapporo, JP

11:00 - 11:30 **CLASSICAL OR MULTI-STEP NUCLEATION**

D. Maes<sup>1</sup>, J. Lutsko<sup>2</sup>, S. Stroobants<sup>1</sup>, M. Sleutel<sup>1</sup>, S. Chinnu<sup>1</sup>, M. Potenza<sup>3</sup>, P. Vekilov<sup>4</sup>; <sup>1</sup>Brussel, BE, <sup>2</sup>Brussels, BE, <sup>3</sup>Milano, IT, <sup>4</sup>US

11:30 - 12:00 LA MER BURST NUCLEATION AND GROWTH: ASSUMPTIONS, MODELS, AND DATA

B. Peters, Santa Barbara, US

10:30 - 12:00 Detector Materials (1 of 5)

Anasazi Ballroom North

Moderation: G. Gundiah<sup>1</sup>, M. Zhuravleva<sup>2</sup>; <sup>1</sup>, <sup>2</sup>Knoxville, TN/US

10:30 - 11:00 THE ELIMINATION OF SUZUKI PHASE PRECIPITATES FROM SINGLE CRYSTALS OF DIVALENT-ION-DOPED ALKALI HALIDES: IMPROVED SCINTILLATORS FOR RADIATION DETECTION

L. Boatner, E. Comer, G. Wright, J. Ramey, R. Riedel, G. Jellison, J. Kolopus; Oak Ridge, TN/US

11:00 - 11:15 STRUCTURE AND THERMAL EXPANSION OF C<sub>3</sub>SCA<sub>3</sub>EU AND C<sub>3</sub>SSRBR<sub>3</sub>EU SCINTILLATORS

M. Loyd<sup>1</sup>, A. Lindsey<sup>1</sup>, M. Patel<sup>1</sup>, C. Melcher<sup>1</sup>, M. Zhuravleva<sup>2</sup>; <sup>1</sup>Knoxville, TN/US, <sup>2</sup>TN/US



11:15 - 11:30 GROWTH AND LUMINESCENCE PROPERTIES OF CS<sub>2</sub>HFI<sub>6</sub>-BASED SINGLE CRYSTAL SCINTILLATORS

S. Kodama<sup>1</sup>, S. Kurosawa<sup>2</sup>, A. Yamaji<sup>3</sup>, J. Pejchal<sup>4</sup>, R. Kral<sup>4</sup>, Y. Ohashi<sup>1</sup>, K. Kamada<sup>5</sup>, Y. Yokota<sup>5</sup>, M. Nikl<sup>4</sup>, A. Yoshikawa<sup>5</sup>; <sup>1</sup>JP, <sup>2</sup>Yamagata, JP, <sup>3</sup>Sendai, Miyagi, JP, <sup>4</sup>Prague, CZ, <sup>5</sup>Sendai, JP

11:30 - 11:45 CRYSTAL GROWTH OF CESIUM HAFNIUM CHLORIDE SCINTILLATORS

S. Lam<sup>1</sup>, A. Burger<sup>2</sup>, S. Motakef<sup>1</sup>; <sup>1</sup>Natick, MA/US, <sup>2</sup>Nashville, TN/US

11:45 - 12:00 EFFECTS OF CA/SR RATIO CONTROL ON OPTICAL AND SCINTILLATION PROPERTIES OF EU-DOPED LI(CA,SR)ALF<sub>6</sub> SINGLE CRYSTALS

Y. Yokota<sup>1</sup>, C. Tanaka<sup>2</sup>, S. Kurosawa<sup>2</sup>, A. Yamaji<sup>2</sup>, Y. Ohashi<sup>3</sup>, K. Kamada<sup>2</sup>, M. Nikl<sup>4</sup>, A. Yoshikawa<sup>2</sup>; <sup>1</sup>JP, <sup>2</sup>Sendai, JP, <sup>3</sup>Sendai, Miyagi, JP, <sup>4</sup>Prague, CZ

10:30 - 12:00 Nonlinear Optical and Laser Host Materials (1 of 3)

Chapel Room

Moderation: K. Stevens, Charlotte, NC/US

10:30 - 11:00 SOME CURRENT DEVELOPMENTS IN HYDROTHERMAL CRYSTAL GROWTH OF BORATES FOR UV NONLINEAR OPTICS

J. Kolis, C. McMillen, R. Terry, H. Giesber; Clemson, SC/US

11:00 - 11:15 SYNTHESIS, GROWTH AND CHARACTERIZATION OF NOVEL NONLINEAR OPTICAL MATERIAL: 4-FLUOROBENZYL TRIPHENYLPHOSPHONIUMCHLORIDE

A. Haribabu<sup>1</sup>, K. Sugandhi<sup>1</sup>, S. Bharathi<sup>2</sup>, A. Jeya Rajendran<sup>2</sup>, K. Eswara Moorthi<sup>2</sup>, M.P. Kannan<sup>2</sup>; <sup>1</sup>Coimbatore, IN, <sup>2</sup>Chennai, IN

11:15 - 11:30 MEASUREMENTS OF D COEFFICIENTS OF SOME CUBIC CRYSTALS AT INFRARED WAVELENGTHS

J. Murray<sup>1</sup>, J. Wei<sup>1</sup>, S. Guha<sup>2</sup>; <sup>1</sup>OH/US, <sup>2</sup>Wpafb, OH/US

10:30 - 12:00 Biological and Biomimetic Materials (1 of 3)

St Francis De Vargas

Moderation: D. Joester<sup>1</sup>, E. Beniash<sup>2</sup>, Y. Huang<sup>2</sup>; <sup>1</sup>Evanston, IL/US, <sup>2</sup>

10:30 - 11:00 ASSEMBLY OF VIRUS NANOREACTORS

T. Douglas, Bloomington, US

11:00 - 11:30 BIO-INSPIRED CRYSTAL GROWTH OF TRANSITION METAL OXIDES IN CONFINEMENT



L. Estroff, Ithaca, NY/US

11:30 - 11:45 **NOVEL BIO-INSPIRED SEMICONDUCTOR/AMINO ACID COMPOSITE SINGLE CRYSTALS: FROM CRYSTAL GROWTH TO BAND GAP ENGINEERING**

I. Polishchuk, B. Pokroy; Haifa, IL

11:45 - 12:00 DESIGN AND SYNTHESIS OF FUNCTIONALIZED SELF-ASSEMBLED MONOLAYERS (SAMS) AS IN VITRO MODEL OF THE ORGANIC INTERFACES IN THE SITE-SELECTIVE MINERALIZATION PROCESS IN THE CHITON TOOTH.

L. Stegbauer<sup>1</sup>, D. Joester<sup>2</sup>; <sup>1</sup>Evanston, US, <sup>2</sup>Evanston, IL/US

10:30 - 12:00 3rd Symposium on 2D Electronic Materials (1 of 6) Zia Ballroom  
Moderation: K. Gaskill<sup>1</sup>, J.M. Redwing<sup>2</sup>; <sup>1</sup>, <sup>2</sup>University Park, PA/US

10:30 - 11:00 TEMPLATED CVD OF LARGE-AREA WS<sub>2</sub> WITH OHMIC GRAPHENE EDGE CONTACTS

M. Fuhrer, Monash, VIC/AU

11:00 - 11:20 OPTIMIZING TRANSITION METAL DISULFIDE METALORGANIC CHEMICAL VAPOR DEPOSITION PROCESSES USING NON-DISPERSIVE INFRARED GAS ANALYZERS

J. Maslar<sup>1</sup>, B. Kalanyan<sup>1</sup>, B. Sperling<sup>1</sup>, W. Kimes<sup>1</sup>, R. Kanjolia<sup>2</sup>; <sup>1</sup>Gaithersburg, US, <sup>2</sup>Haverhill, MA/US

11:20 - 11:40 OPTIMIZATION OF MOVPE OF 2D MOS<sub>2</sub>

M. Heuken<sup>1</sup>, M. Marx<sup>2</sup>, Y.-. Lin<sup>2</sup>, H. Kalisch<sup>2</sup>, A. Vescan<sup>2</sup>, A. Grundmann<sup>2</sup>; <sup>1</sup>, <sup>2</sup>DE

11:40 - 12:00 EPITAXIAL GROWTH OF MOLYBDENUM DISULFIDE ON GALLIUM NITRIDE

R. Burke<sup>1</sup>, K. Zhang<sup>2</sup>, D. Ruzmetov<sup>1</sup>, A. Herzing<sup>3</sup>, G. Birdwell<sup>1</sup>, M. Neupane<sup>1</sup>, T. O'regan<sup>1</sup>, B. Nichols<sup>1</sup>, M. Chin<sup>1</sup>, A. Mazzoni<sup>1</sup>, A. Davydov<sup>3</sup>, J. Robinson<sup>2</sup>, M. Dubey<sup>1</sup>, T. Ivanov<sup>1</sup>; <sup>1</sup>Adelphi, MD/US, <sup>2</sup>University Park, PA/US, <sup>3</sup>Gaithersburg, MD/US

13:30 - 15:00 Fundamentals of Crystal Growth (2 of 9) Anasazi Ballroom South

13:30 - 14:00 IMPACT OF ADDITIVES ON THE CRYSTALLIZATION OF PHARMACEUTICAL SUBSTANCES



L. Taylor, West Lafayette, IN/US

14:00 - 14:30 NUCLEATION OF CRYSTALS OF HARD POLYHEDRA

J. Dshemuchadse, S. Nola, R. Newman, S. Glotzer; Ann Arbor, MI/US

14:30 - 15:00 **SMALL-VOLUME NUCLEATION**

S. Veessler, N. Candoni, R. Grossier, R. Morin; Marseille, FR

13:30 - 15:00 Detector Materials (2 of 5)

Anasazi Ballroom North

Moderation: G. Gundiah<sup>1</sup>, M. Zhuravleva<sup>2</sup>; <sup>1</sup>, <sup>2</sup>Knoxville, TN/US

13:30 - 13:45 PHASE EQUILIBRIA AND SEGREGATION IN BRIDGMAN GROWTH OF CS<sub>2</sub>LIYCL<sub>6</sub>

F. Ruta<sup>1</sup>, R. Feigelson<sup>1</sup>, S. Swider<sup>2</sup>, S. Lam<sup>2</sup>; <sup>1</sup>CA/US, <sup>2</sup>Natick, MA/US

13:45 - 14:15 **HIGH-THROUGHPUT GROWTH OF SRL<sub>2</sub>(EU) AND CLYC SCINTILLATORS BY THE EFG METHOD**

S. Swider<sup>1</sup>, G. Calvert<sup>2</sup>, M. Overholt<sup>3</sup>, F. Ruta<sup>2</sup>, R. Feigelson<sup>2</sup>; <sup>1</sup>, <sup>2</sup>Stanford, MA/US, <sup>3</sup>Natick, MA/US

14:15 - 14:45 PULSED NEUTRON IMAGING STUDIES OF IN SITU GROWTH OF NEUTRON AND GAMMA DETECTOR MATERIALS

J.Z. Larese, C. Crain, N. Strange; TN/US

14:45 - 15:00 **SIMULTANEOUS GROWTH OF 38 MM DIAMETER KCAI<sub>3</sub>:EU SCINTILLATOR**

M. Loyd<sup>1</sup>, L. Stand<sup>1</sup>, C. Melcher<sup>2</sup>, M. Zhuravleva<sup>2</sup>; <sup>1</sup>TN/US, <sup>2</sup>Knoxville, TN/US

13:30 - 15:00 Nonlinear Optical and Laser Host Materials (2 of 3)

Chapel Room

Moderation: K. Stevens, Charlotte, NC/US

13:30 - 14:00 ADVANCES IN NONLINEAR OPTICAL CRYSTALS FOR THE MID-INFRARED

P. Schunemann, Nashua, NH/US

14:00 - 14:30 THERMO-OPTIC AND STRESS-OPTIC PROPERTIES OF CADMIUM SILICON PHOSPHIDE

D. Zelmon<sup>1</sup>, W. Poston<sup>2</sup>, J. Kunkel<sup>2</sup>; <sup>1</sup>Wright Patterson Air Force Base, US, <sup>2</sup>Wright Patterson Air Force Base, OH/US



14:30 - 14:45 ADVANCES SINGLE CRYSTAL CDSIP<sub>2</sub> FOR HIGH ENERGY MID-INFRARED GENERATION

K. Zawilski<sup>1</sup>, P. Schunemann<sup>2</sup>, F..K. Hopkins<sup>3</sup>; <sup>1</sup>Nashua, NH/US, <sup>2</sup>, <sup>3</sup>OH/US

14:45 - 15:00 OPTICAL ABSORPTION BANDS IN CDSIP<sub>2</sub> CRYSTALS

E. Scherrer<sup>1</sup>, B. Kananen<sup>1</sup>, N. Giles<sup>1</sup>, L. Halliburton<sup>2</sup>, F..K. Hopkins<sup>3</sup>, P. Schunemann<sup>4</sup>, K. Zawilski<sup>5</sup>; <sup>1</sup>Wright-Patterson Air Force Base, US, <sup>2</sup>Morgantown, WV/US, <sup>3</sup>OH/US, <sup>4</sup>, <sup>5</sup>Nashua, NH/US

13:30 - 15:00 Biological and Biomimetic Materials (2 of 3) St Francis De Vargas  
Moderation: D. Joester<sup>1</sup>, E. Beniash<sup>2</sup>, Y. Huang<sup>2</sup>; <sup>1</sup>Evanston, IL/US, <sup>2</sup>

13:30 - 14:00 ANTIMALARIALS INHIBIT HEMATIN CRYSTALLIZATION BY UNIQUE DRUG-SURFACE SITE INTERACTIONS

P. Vekilov, US

14:00 - 14:30 THE SECONDARY AND QUATERNARY STRUCTURE OF AMELOGENIN ON HYDROXYAPATITE

W. Shaw<sup>1</sup>, R. Arachchige<sup>1</sup>, S. Burton<sup>1</sup>, J. Lu<sup>2</sup>, Y. Xu<sup>1</sup>, J. Tao<sup>1</sup>, B. Tarasevich<sup>1</sup>, G. Buchko<sup>1</sup>; <sup>1</sup>Richland, WA/US, <sup>2</sup>CN

14:30 - 14:45 SPECIFIC AND NON-SPECIFIC INTERACTIONS WITH GROWING CALCITE CRYSTALS -LIVE IMAGING AFM STUDIES

A. Berman, B. Tah; Beer-Sheva, IL

14:45 - 15:00 QUANTIFYING CRYSTALLIZATION KINETICS OF AMORPHOUS CALCIUM CARBONATE USING DROPLET MICROFLUIDICS

J. Cavanaugh, M. Whittaker, D. Joester; Evanston, IL/US

13:30 - 15:00 3rd Symposium on 2D Electronic Materials (2 of 6) Zia Ballroom  
Moderation: K. Gaskill<sup>1</sup>, J.M. Redwing<sup>2</sup>; <sup>1</sup>, <sup>2</sup>University Park, PA/US

13:30 - 14:00 STUDIES OF LOCAL ELECTRONIC PROPERTIES IN GRAPHENE AND 2D MATERIALS

O. Kazakova, Teddington, GB

14:00 - 14:20 INFLUENCE OF SUBSTRATE ON THE GROWTH AND PROPERTIES OF THIN 3R NBS<sub>2</sub> FILMS GROWN BY CHEMICAL VAPOR DEPOSITION.



A. Kozhakhmetov<sup>1</sup>, T. Choudhury<sup>2</sup>, Z. Al Balushi<sup>1</sup>, Y. Chen<sup>1</sup>, Y. Liu<sup>1</sup>, J. Redwing<sup>1</sup>;  
<sup>1</sup>University Park, PA/US, <sup>2</sup>State College, PA/US

14:20 - 14:40 **GROUP IV CHALCOGENIDES: EMERGING 2D AND LAYERED SEMICONDUCTORS**

P. Sutter<sup>1</sup>, Y. Huang<sup>2</sup>, H. Komsa<sup>3</sup>, A. Krasheninnikov<sup>4</sup>, E. Sutter<sup>2</sup>; <sup>1</sup>Lincoln, NE/US, <sup>2</sup>US, <sup>3</sup>FI, <sup>4</sup>DE

14:40 - 15:00 VAPOR PHASE EPITAXY OF HEXAGONAL BORON NITRIDE ON SAPPHIRE

A. Rice<sup>1</sup>, A. Allerman<sup>2</sup>, M. Crawford<sup>3</sup>, T. Beechem<sup>4</sup>, T. Ohta<sup>3</sup>, D. Medlin<sup>3</sup>, C. Spataru<sup>3</sup>, J. Figiel<sup>3</sup>, M. Smith<sup>3</sup>; <sup>1</sup>Albuquerque, NM/US, <sup>2</sup>Albuquerque, US, <sup>3</sup>US, <sup>4</sup>NM/US

15:30 - 17:00 Fundamentals of Crystal Growth (3 of 9) Anasazi Ballroom South  
Moderation: P.G. Vekilov, US

15:30 - 16:00 **CURRENT STATUS & FUTURE CHALLENGES IN CRYSTAL GROWTH PREDICTION**

M. Doherty, Santa Barbara, CA/US

16:00 - 16:30 EXPERIMENT AND PREDICTION OF SURFACE TEMPLATED POLYMORPHS AND SOLVATES

A. Florence, Glasgow, GB

16:30 - 17:00 UNRAVELING COMPLEXITY IN THE CRYSTALLIZATION OF PHARMACEUTICAL SOLIDS

S. Reutzl-Edens, Indianapolis, US

15:30 - 17:00 Detector Materials (3 of 5) Anasazi Ballroom North  
Moderation: G. Gundiah<sup>1</sup>, M. Zhuravleva<sup>2</sup>; <sup>1</sup>, <sup>2</sup>Knoxville, TN/US

15:30 - 15:45 MITIGATION OF SECOND-PHASE PARTICLES IN SINGLE CRYSTALS VIA POST-GROWTH TREATMENT: TEMPERATURE GRADIENT ZONE MELTING AND ANNEALING

N. Morgan, K. Wang, J. Derby; Minneapolis, MN/US

15:45 - 16:00 MODELING AND EXPERIMENTAL ANALYSIS OF ZINC DISTRIBUTION AND DISLOCATION DENSITY EVOLUTION IN CZT BRIDGMAN CRYSTAL GROWTH



A. Galyukov<sup>1</sup>, V. Artemyev<sup>2</sup>, A. Smirnov<sup>2</sup>, V. Mamedov<sup>2</sup>, V. Kalaev<sup>2</sup>, Z. Changhe<sup>3</sup>,  
C. Xu<sup>3</sup>, S. Sun<sup>3</sup>; <sup>1</sup>Richmond, VA/US, <sup>2</sup>St. Petersburg, RU, <sup>3</sup>Shanghai, CN

16:00 - 16:15 TOWARDS OPTIMIZATION OF ACRT SCHEDULES APPLIED TO THE  
GRADIENT FREEZE GROWTH OF CADMIUM ZINC TELLURIDE

M. Divecha<sup>1</sup>, J. McCoy<sup>2</sup>, K. Lynn<sup>2</sup>, J. Derby<sup>3</sup>; <sup>1</sup>Minneapolis, US, <sup>2</sup>Pullman, WA/US,  
<sup>3</sup>Minneapolis, MN/US

16:15 - 16:30 ALTERNATIVE CRYSTAL GROWTH TECHNIQUES FOR THALLIUM  
BROMIDE SEMICONDUCTOR RADIATION DETECTORS

A. Datta, P. Becla, K. Becla, S. Motakef; Natick, MA/US

16:30 - 16:45 ANISOTROPIC AND TEMPERATURE-DEPENDENT THERMAL  
CONDUCTIVITY OF LEAD IODIDE

A. Croell<sup>1</sup>, J. Tonn<sup>2</sup>, E. Post<sup>3</sup>, H. Böttner<sup>2</sup>, A. Danilewsky<sup>4</sup>; <sup>1</sup>Huntsville, AL/US,  
<sup>2</sup>Freiburg, DE, <sup>3</sup>Selb, DE, <sup>4</sup>DE

15:30 - 17:00 Nonlinear Optical and Laser Host Materials (3 of 3)

Chapel Room

Moderation: K. Stevens, Charlotte, NC/US

15:30 - 15:45 GROWTH AND PROCESSING OF ORIENTATION-PATTERNED  
SEMICONDUCTOR WAVEGUIDES FOR MID-IR FREQUENCY CONVERSION

P. Schunemann<sup>1</sup>, D. Magarrell<sup>1</sup>, P. Moffitt<sup>1</sup>, P. Ketteridge<sup>1</sup>, B. Deshano<sup>2</sup>, R. Peterson<sup>2</sup>;  
<sup>1</sup>Nashua, NH/US, <sup>2</sup>Wpafb, OH/US

15:45 - 16:00 HETEROEPITAXY OF ORIENTATION-PATTERNED NONLINEAR OPTICAL  
MATERIALS

V. Tassev<sup>1</sup>, S. Vangala<sup>2</sup>, R. Peterson<sup>3</sup>, M. Snure<sup>3</sup>; <sup>1</sup>Wright-Patterson Afb, OH/US,  
<sup>2</sup>OH/US, <sup>3</sup>Wpafb, OH/US

16:00 - 16:15 TUNABLE 3-5 AND 7-12  $\mu\text{M}$  PICOSECOND OPTICAL PARAMETRIC  
AMPLIFIER BASED ON LIINSE2 MID-INFRARED CRYSTAL

X. Tao, Ji'nan, CN

16:15 - 16:30 GROWTH OF CHROMIUM DOPED FORSTERITE  $\text{Cr:MG}_2\text{SIO}_4$  LASER  
CRYSTALS FROM NON-STOICHIOMETRIC MELTS AND THE PROLONGED  
HIGH-TEMPERATURE OXIDIZING ANNEALING OF THE CRYSTALS AS THE  
TOOLS FOR CHANGE THE OXIDATION STATES OF CHROMIUM IN THE  
CRYSTALS

V. Sanina, K. Subbotin, D. Lis, E. Zharikov; Moscow, RU



15:30 - 17:00 Biological and Biomimetic Materials (3 of 3) St Francis De Vargas  
Moderation: D. Joester<sup>1</sup>, E. Beniash<sup>2</sup>, Y. Huang<sup>2</sup>; <sup>1</sup>Evanston, IL/US, <sup>2</sup>

15:30 - 16:00 WHAT YOUR MOTHER NEVER TOLD YOU ABOUT APATITE...AND HOW TO EXPLOIT IT  
J. Pasteris, Saint Louis, MO/US

16:00 - 16:30 TOOTH ENAMEL FORMATION: THE ESSENTIAL ROLE OF AMELOGENIN PHOSPHORYLATION  
H. Margolis<sup>1</sup>, N. Shin<sup>2</sup>, H. Yamazaki<sup>1</sup>, S. Margolis<sup>3</sup>, M. Pugach<sup>1</sup>, J. Simmer<sup>4</sup>, E. Beniash<sup>5</sup>; <sup>1</sup>Cambridge, MA/US, <sup>2</sup>Boston, MA/US, <sup>3</sup>Baltimore, MD/US, <sup>4</sup>Ann Arbor, MI/US, <sup>5</sup>Pittsburgh, PA/US

16:30 - 17:00 **REGULATION OF COCCOLITH CALCITE FORMATION**  
A. Scheffel, S. Sviben, A. Gal, D. Faivre; Potsdam, DE

15:30 - 17:20 3rd Symposium on 2D Electronic Materials (3 of 6) Zia Ballroom  
Moderation: K. Gaskill<sup>1</sup>, J.M. Redwing<sup>2</sup>; <sup>1</sup>, <sup>2</sup>University Park, PA/US

15:30 - 16:00 REMOTE EPITAXY THROUGH GRAPHENE SAVES WAFER COST VIA 2DLT  
J. Kim,

16:00 - 16:30 TWO-DIMENSIONAL GALLIUM NITRIDE REALIZED VIA GRAPHENE ENCAPSULATION  
Z. Al Balushi<sup>1</sup>, J. Robinson<sup>2</sup>, J. Redwing<sup>3</sup>; <sup>1</sup>University Park, PA/US, <sup>2</sup>PA/US, <sup>3</sup>

16:30 - 17:00 THE GROWTH AND ELECTRONIC PROPERTIES OF ULTRA-THIN EPITAXIAL TOPOLOGICAL DIRAC SEMIMETAL NA<sub>3</sub>BI FILMS  
M. Edmonds, Clayton, AU

17:00 - 17:20 THE EFFECTS OF COMPOSITION, GROWTH CONDITIONS AND DOPING ON VERTICAL BRIDGMAN GROWTH OF THE TOPOLOGICAL INSULATOR BI<sub>2</sub>TE<sub>2</sub>SE  
D. Snyder<sup>1</sup>, R. Cavalero<sup>1</sup>, R. Lavelle<sup>1</sup>, R. Redwing<sup>2</sup>; <sup>1</sup>PA/US, <sup>2</sup>University Park, US

17:00 - 19:00 Poster Session (1 of 2) Eldorado Grand Ballroom





- 17:00 - 17:00 **GROWTH AND MAGNETIC PROPERTIES OF PRCO<sub>2</sub> SINGLE CRYSTALS**  
Y. Liu, A. Pathak, Y. Mudryk, Q. Lin, V. Pecharsky, T. Lograsso; Ames, IA/US
- 17:00 - 17:00 **GROWTH, MICROSTRUCTURE AND MECHANICAL PROPERTIES OF IRIIDIUM FIBER CRYSTAL BY ALLOY-MICRO-PULLING-DOWN METHOD**  
Y. Yokota<sup>1</sup>, T. Nihei<sup>2</sup>, Y. Ohashi<sup>2</sup>, S. Kurosawa<sup>3</sup>, K. Kamada<sup>1</sup>, A. Yoshikawa<sup>1</sup>;  
<sup>1</sup>Sendai, JP, <sup>2</sup>Sendai, Miyagi, JP, <sup>3</sup>Yamagata, JP
- 17:00 - 17:00 **GROWTH AND INTERNAL STRUCTURE OF CO-CR-MO ALLOY FIBER CRYSTALS BY ALLOY-MICRO-PULLING-DOWN METHOD**  
T. Nihei<sup>1</sup>, Y. Yokota<sup>2</sup>, A. Yamaji<sup>2</sup>, Y. Ohashi<sup>1</sup>, S. Kurosawa<sup>3</sup>, K. Kamada<sup>2</sup>, A. Yoshikawa<sup>2</sup>; <sup>1</sup>Sendai, Miyagi, JP, <sup>2</sup>Sendai, JP, <sup>3</sup>Yamagata, JP
- 17:00 - 17:00 **EFFECT OF POWER HISTORY ON THE SHAPE AND THE THERMAL STRESS OF LARGE SIZE SAPPHIRE CRYSTAL DURING THE KYROPOULOS PROCESS**  
T.P. Nguyen, J. Chen, H. Chuang, C. Hu; Taoyuan, TW
- 17:00 - 17:00 **GROWTH AND PIEZOELECTRIC PROPERTIES OF CA<sub>3</sub>TA(GA<sub>1-x</sub>SC<sub>x</sub>)<sub>3</sub>SI<sub>2</sub>O<sub>14</sub> BULK SINGLE CRYSTALS**  
  
Y. Igarashi<sup>1</sup>, Y. Yokota<sup>2</sup>, Y. Ohashi<sup>3</sup>, K. Inoue<sup>4</sup>, A. Yamaji<sup>2</sup>, Y. Shoji<sup>5</sup>, K. Kamada<sup>2</sup>, S. Kurosawa<sup>2</sup>, A. Yoshikawa<sup>2</sup>; <sup>1</sup>, <sup>2</sup>Sendai, JP, <sup>3</sup>Sendai, Miyagi, JP, <sup>4</sup>JP, <sup>5</sup>Miyagi, JP
- 17:00 - 17:00 **STUDIES ON GROWTH ASPECTS, PROPERTIES AND EFFECTS OF H<sup>+</sup> ION IMPLANTATION ON ORGANIC SINGLE CRYSTAL: L-HISTIDINIUM SEMISUCCINATE (LHS)**  
H. Arul<sup>1</sup>, D. Rajan Babu<sup>2</sup>, R. Ezhil Vizhi<sup>2</sup>; <sup>1</sup>IN, <sup>2</sup>Vellore, IN
- 17:00 - 17:00 **SYNTHESIS, GROWTH AND CHARACTERIZATION OF METAL ORGANIC SODIUM HYDROGEN OXALATE MONOHYDRATE SINGLE CRYSTAL**  
D.S. Ajisha<sup>1</sup>, R. Ezhil Vizhi<sup>1</sup>, D. Rajan Babu<sup>2</sup>, H. Arul<sup>1</sup>; <sup>1</sup>IN, <sup>2</sup>Vellore, IN
- 17:00 - 17:00 **GROWTH OF DETECTOR GRADE CADMIUM ZINC TELLURIDE VIA IMPLEMENTATION OF CRUCIBLE ROTATION IN MODIFIED VERTICAL BRIDGMAN METHOD**  
J. McCoy<sup>1</sup>, S. Kakkireni<sup>1</sup>, S. Swain<sup>1</sup>, M. Divecha<sup>2</sup>, J. Derby<sup>3</sup>, K. Lynn<sup>1</sup>; <sup>1</sup>Pullman, WA/US, <sup>2</sup>Minneapolis, US, <sup>3</sup>Minneapolis, MN/US



17:00 - 17:00 **MELT GROWTH OF ZINC ALUMINATE SPINEL SINGLE CRYSTAL BY THE MICRO-PULLING DOWN METHOD UNDER ATMOSPHERIC PRESSURE**

A. Yoshikawa<sup>1</sup>, K. Kamada<sup>1</sup>, Y. Shoji<sup>1</sup>, V. Kochurikhin<sup>2</sup>, S. Kurosawa<sup>1</sup>, A. Yamaji<sup>1</sup>, Y. Ohashi<sup>3</sup>, Y. Yokota<sup>1</sup>; <sup>1</sup>Sendai, JP, <sup>2</sup>RU, <sup>3</sup>Sendai, Miyagi, JP

17:00 - 17:00 **REVISITING CAPILLARITY AND ITS IMPACT ON SHAPE EVOLUTION DURING CZOCHRALSKI CRYSTAL GROWTH**

S. Brandon, O. Weinstein; Haifa, IL

17:00 - 17:00 **CRYSTAL GROWTH AND CHARACTERIZATION OF UNDOPED AND DY-DOPED TLPB<sub>2</sub>BR<sub>5</sub> FOR NUCLEAR DETECTION AND IR LASERS**

U. Hommerich<sup>1</sup>, E. Brown<sup>1</sup>, D. Hart<sup>2</sup>, M. Swain<sup>1</sup>, H. Chen<sup>3</sup>, S. Trivedi<sup>3</sup>; <sup>1</sup>Hampton, US, <sup>2</sup>Hampton, VA/US, <sup>3</sup>Sparks Glenco, MD/US

17:00 - 17:00 **ZONE-REFINEMENT PURIFICATION, FILTERING METHOD AND GROWTH DIFFICULTIES OF EUROPIUM DOPED STRONTIUM IODIDE (SrI<sub>2</sub>:Eu<sup>2+</sup>) SCINTILLATOR SINGLE CRYSTAL FOR RADIATION DETECTION APPLICATIONS**

A. Raja<sup>1</sup>, D. Joseph Daniel<sup>2</sup>, P. Ramasamy<sup>1</sup>, S..G. Singh<sup>3</sup>, S. Sen<sup>3</sup>, S..C. Gadkari<sup>3</sup>; <sup>1</sup>Chennai, IN, <sup>2</sup>Daegu, KR, <sup>3</sup>Mumbai, IN

17:00 - 17:00 **PALLADIUM OXIDE THIN FILMS FOR OXIDIZING GASES DETECTION**

A. Samoylov<sup>1</sup>, V. Ievlev<sup>2</sup>, S. Ryabtsev<sup>1</sup>, A. Shaposhnik<sup>2</sup>, A. Sinelnikov<sup>1</sup>; <sup>1</sup>Voronezh, RU, <sup>2</sup>RU

17:00 - 17:00 **BORON CODOPING OF CZOCHRALSKI GROWN LUTETIUM ALUMINUM GARNET AND THE EFFECT ON SCINTILLATION PROPERTIES**

C. Foster<sup>1</sup>, M. Koschan<sup>1</sup>, C. Melcher<sup>2</sup>, Y. Wu<sup>1</sup>; <sup>1</sup>Knoxville, US, <sup>2</sup>TN/US

17:00 - 17:00 **CRYSTAL GROWTH OF KCAI<sub>3</sub>:EU AND KSR<sub>2</sub>I<sub>5</sub>:EU SCINTILLATORS USING THE MICRO-PULLING-DOWN METHOD**

M. Zhuravleva<sup>1</sup>, R. Kral<sup>2</sup>, M. Loyd<sup>1</sup>, C. Melcher<sup>1</sup>, S. Kurosawa<sup>3</sup>, A. Yoshikawa<sup>3</sup>; <sup>1</sup>TN/US, <sup>2</sup>Prague, CZ, <sup>3</sup>Sendai, JP

17:00 - 17:00 **SPATIAL DISTRIBUTION OF EU IN BABRCL:EU SINGLE CRYSTAL ASSESSED BY LASER INDUCED BREAKDOWN SPECTROSCOPY (LIBS)**



T. Shalapska<sup>1</sup>, D. Perrodin<sup>2</sup>, J. Gonzalez<sup>2</sup>, D. Oropeza<sup>2</sup>, X. Mao<sup>2</sup>, V. Zobra<sup>2</sup>, G. Bizarri<sup>2</sup>, E. Bourret-Courchesne<sup>2</sup>; <sup>1</sup>Berkeley, US, <sup>2</sup>Berkeley, CA/US

17:00 - 17:00 CZOCHRALSKI GROWTH AND SCINTILLATION PROPERTIES OF CE DOPED GADOLINIUM SCANDIUM ALUMINIUM GARNET SINGLE CRYSTALS

K. Kamada<sup>1</sup>, V. Kochurikhin<sup>2</sup>, S. Kurosawa<sup>1</sup>, Y. Ohashi<sup>3</sup>, Y. Yokota<sup>1</sup>, A. Yoshikawa<sup>1</sup>; <sup>1</sup>Sendai, JP, <sup>2</sup>RU, <sup>3</sup>Sendai, Miyagi, JP

17:00 - 17:00 BULK GROWTH OF THE CSPBBR<sub>3</sub> PEROVSKITE, STRUCTURE AND OPTICAL PROPERTIES

D. Perrodin<sup>1</sup>, R. Reis<sup>1</sup>, T. Shalapska<sup>2</sup>, S. Derenzo<sup>1</sup>, E. Bourret<sup>1</sup>, G. Bizarri<sup>2</sup>; <sup>1</sup>Berkeley, CA/US, <sup>2</sup>Berkeley, US

17:00 - 17:00 LI<sup>+</sup>, NA<sup>+</sup> AND K<sup>+</sup> CO-DOPING EFFECTS ON SCINTILLATION PROPERTIES OF CE:GD<sub>3</sub>GA<sub>3</sub>AL<sub>2</sub>O<sub>12</sub> SINGLE CRYSTALS

M. Yoshino<sup>1</sup>, K. Kamada<sup>2</sup>, V. Kochurikhin<sup>2</sup>, M. Ivanov<sup>3</sup>, M. Nikl<sup>4</sup>, S. Okumura<sup>5</sup>, S. Yamamoto<sup>5</sup>, J.Y. Yeom<sup>6</sup>, Y. Shoji<sup>2</sup>, S. Kurosawa<sup>7</sup>, Y. Yokota<sup>2</sup>, Y. Ohashi<sup>2</sup>, A. Yoshikawa<sup>2</sup>; <sup>1</sup>Miyagi, JP, <sup>2</sup>Sendai, JP, <sup>3</sup>RU, <sup>4</sup>Prague, CZ, <sup>5</sup>Aichi, JP, <sup>6</sup>Korea, KR, <sup>7</sup>Yamagata, JP

17:00 - 17:00 BRIDGEMAN GROWTH AND CHARACTERIZATION OF PYN-PMN-PT FERROELECTRIC SINGLE CRYSTALS

S. Taylor<sup>1</sup>, J. Luo<sup>2</sup>, W. Hackenberger<sup>2</sup>, S. Zhang<sup>3</sup>, T. Shrout<sup>4</sup>, F. Li<sup>4</sup>; <sup>1</sup>State College, PA/US, <sup>2</sup>State College, US, <sup>3</sup>AU, <sup>4</sup>PA/US

17:00 - 17:00 SURFACE FREE ENERGY AND THE MORPHOLOGY OF FLUORITE CRYSTALS

T. Suzuki<sup>1</sup>, A. Tsukagoshi<sup>2</sup>; <sup>1</sup>Nagano-Shi, JP, <sup>2</sup>JP

19:00 - 21:00 OMVPE of Wide Bandgap Materials for Opto- and Power- Electronics Anasazi Ballroom South

19:00 - 19:20 GAN EPITAXY ON GLASS USING A (111) SILICON SEED LAYER FORMED BY ALUMINUM-INDUCED CRYSTALLIZATION

M. Hainey Jr.<sup>1</sup>, Z. Al Balushi<sup>2</sup>, K. Wang<sup>3</sup>, N. Martin<sup>2</sup>, A. Bansal<sup>2</sup>, J. Redwing<sup>4</sup>; <sup>1</sup>University Park, US, <sup>2</sup>University Park, PA/US, <sup>3</sup>US, <sup>4</sup>

19:20 - 19:40 STRESS ENGINEERED ALGAN/GAN POWER ELECTRONIC DEVICE STRUCTURES

I. Mahaboob<sup>1</sup>, K. Hogan<sup>2</sup>, E. Rocco<sup>1</sup>, F. Shahedipour-Sandvik<sup>2</sup>; <sup>1</sup>Albany, NY/US, <sup>2</sup>Albany, US



19:40 - 20:00 INFLUENCE OF THE SUBSTRATE ORIENTATION ON STRUCTURAL AND ELECTRICAL PROPERTIES OF HOMOEPITAXIAL  $\beta$ -GA<sub>2</sub>O<sub>3</sub> THIN FILMS GROWN BY MOVPE

G. Wagner, M. Albrecht, M. Baldini, A. Fiedler, Z. Galazka, K. Irmscher, R. Schewski; Berlin, DE

20:00 - 20:20 GROWTH OF GAN ON 2D BN BY MOCVD FOR FLEXIBLE ELECTRONICS

M. Snure, N. Glavin, K. Chabak, Q. Paduano; Wright Patterson Afb, OH/US

20:20 - 20:40 GAN P-I-P-I-N SEPARATE ABSORPTION AND MULTIPLICATION ULTRAVIOLET AVALANCHE PHOTODIODES BY METALORGANIC CHEMICAL VAPOR DEPOSITION

M. Ji<sup>1</sup>, J. Kim<sup>2</sup>, T. Detchprohm<sup>1</sup>, S. Shen<sup>1</sup>, R. Dupuis<sup>1</sup>; <sup>1</sup>GA/US, <sup>2</sup>KR

20:40 - 21:00 **UV AIR-GAP/AL<sub>x</sub>GA<sub>1-x</sub>N DISTRIBUTED BRAGG REFLECTORS FABRICATED USING CONDUCTIVITY-SELECTIVE ELECTROCHEMICAL ETCHING**

Y. Park<sup>1</sup>, T. Detchprohm<sup>1</sup>, O. Moreno<sup>1</sup>, K. Mehta<sup>1</sup>, Y. Liu<sup>1</sup>, S. Wang<sup>2</sup>, S. Shen<sup>1</sup>, P..D. Yoder<sup>1</sup>, F. Ponce<sup>2</sup>, R. Dupuis<sup>1</sup>; <sup>1</sup>Atlanta, GA/US, <sup>2</sup>AZ/US

08-01-2017

08:00 - 10:00 Awards Session

Anasazi Ballroom

Moderation: K.T. Zawilski, Nashua, NH/US

10:30 - 12:00 Fundamentals of Crystal Growth (4 of 9)

Anasazi Ballroom South

Moderation: P.G. Vekilov, US

10:30 - 11:00 IN-SITU ATOMIC FORCE MICROSCOPY STUDIES OF POLYMER MICELLE-CALCITE INTERACTIONS

L. Estroff, C. Hendley; Ithaca, NY/US

11:00 - 11:30 NUCLEATION AND GROWTH OF CRYSTALLINE CARBONATES FROM AMORPHOUS PRECURSORS

D. Joester, Evanston, IL/US

11:30 - 12:00 GUINIER-PRESTON ZONES WITHIN A BIOGENIC SINGLE CRYSTAL: A BIOLOGICAL PRESTRESSING STRATEGY

B. Pokroy, Haifa, IL



10:30 - 12:00 Detector Materials (4 of 5) Anasazi Ballroom North  
 Moderation: G. Gundiah<sup>1</sup>, M. Zhuravleva<sup>2</sup>; <sup>1</sup>, <sup>2</sup>Knoxville, TN/US

10:30 - 11:00 CONTROLLING SCINTILLATOR PROPERTIES VIA CODOPING: AN OVERVIEW

C. Melcher<sup>1</sup>, M. Koschan<sup>2</sup>, M. Zhuravleva<sup>1</sup>, A. Lindsey<sup>2</sup>, Y. Wu<sup>3</sup>, H. Rothfuss<sup>2</sup>, F. Meng<sup>2</sup>, S. Donald<sup>2</sup>, K. Yang<sup>2</sup>, J. Hayward<sup>2</sup>, L. Eriksson<sup>2</sup>; <sup>1</sup>TN/US, <sup>2</sup>Knoxville, TN/US, <sup>3</sup>Knoxville, US

11:00 - 11:15 INFLUENCE OF CODOPING, NON-STOICHIOMETRY AND GA ADMIXTURE ON LUAG:CE SCINTILLATION PROPERTIES

J. Pejchal<sup>1</sup>, V. Babin<sup>2</sup>, A. Beitlerova<sup>2</sup>, R. Kucerkova<sup>2</sup>, P. Prusa<sup>2</sup>, D. Panek<sup>3</sup>, T. Parkman<sup>3</sup>, K. Kamada<sup>4</sup>, A. Yoshikawa<sup>4</sup>; <sup>1</sup>, <sup>2</sup>Prague, CZ, <sup>3</sup>Kladno, CZ, <sup>4</sup>Sendai, JP

11:15 - 11:30 CRYSTAL GROWTH AND TEMPERATURE DEPENDENCE OF LIGHT OUTPUT OF CE-DOPED (GD, LA, Y)<sub>2</sub>Si<sub>2</sub>O<sub>7</sub> SINGLE CRYSTALS

T. Horiai<sup>1</sup>, S. Kurosawa<sup>2</sup>, R. Murakami<sup>3</sup>, Y. Shoji<sup>4</sup>, J. Pejchal<sup>1</sup>, A. Yamaji<sup>3</sup>, Y. Ohashi<sup>5</sup>, K. Kamada<sup>3</sup>, Y. Yokota<sup>3</sup>, T. Ishizu<sup>6</sup>, Y. Ohishi<sup>6</sup>, T. Nakaya<sup>6</sup>, A. Yoshikawa<sup>3</sup>; <sup>1</sup>, <sup>2</sup>JP, <sup>3</sup>Sendai, JP, <sup>4</sup>Miyagi, JP, <sup>5</sup>Sendai, Miyagi, JP, <sup>6</sup>Hamamatsu, JP

11:30 - 11:45 GROWTH AND SCINTILLATION PROPERTIES OF DIRECTIONALLY SOLIDIFIED CE:LABR3/AEBR2 (AE=MG, CA, SR, BA) EUTECTIC SYSTEM

A. Yoshikawa<sup>1</sup>, Y. Furuya<sup>2</sup>, K. Kamada<sup>1</sup>, H. Chiba<sup>2</sup>, S. Kurosawa<sup>3</sup>, A. Yamaji<sup>1</sup>, Y. Shoji<sup>1</sup>, Y. Ohashi<sup>1</sup>, Y. Yokota<sup>1</sup>; <sup>1</sup>Sendai, JP, <sup>2</sup>Sendai, Miyagi, JP, <sup>3</sup>Yamagata, JP

11:45 - 12:00 CRYSTAL GROWTH AND SCINTILLATION PROPERTIES OF ND-DOPED (GD, LA)<sub>2</sub>Si<sub>2</sub>O<sub>7</sub> CRYSTAL AS INFRA-RED SCINTILLATOR

S. Kurosawa<sup>1</sup>, T. Shishido<sup>2</sup>, T. Horiai<sup>2</sup>, S. Kodama<sup>1</sup>, T. Sugawara<sup>1</sup>, K. Yubuta<sup>2</sup>, A. Yamaji<sup>1</sup>, Y. Ohashi<sup>3</sup>, Y. Yokota<sup>1</sup>, K. Kamada<sup>1</sup>, A. Yoshikawa<sup>1</sup>; <sup>1</sup>Sendai, JP, <sup>2</sup>JP, <sup>3</sup>Sendai, Miyagi, JP

10:30 - 12:00 Bulk growth & Epitaxy for Power Electronics (1 of 3) St Francis De Vargas  
 Moderation: M. Dudley, B. Raghoechar;

10:30 - 11:00 EPIGROWTH CHALLENGES FOR HIGH-VOLTAGE SIC POWER DEVICES

J. Cooper, Santa Fe, US

11:00 - 11:30 IMPACT OF TRANSITION METAL IMPURITIES ON NITRIDE DEVICES

D. Wickramaratne, Santa Barbara, US



11:30 - 12:00 **GROWTH OF  $\text{Ga}_2\text{O}_3$  FOR DEVICE PRODUCTION**

S. Okur<sup>1</sup>, N. Sbrockey<sup>1</sup>, T. Salagaj<sup>2</sup>, G. Tompa<sup>2</sup>, Y. Yao<sup>3</sup>, R. Davis<sup>3</sup>, L. Porter<sup>3</sup>, L. Lyle<sup>3</sup>; <sup>1</sup>Piscataway, US, <sup>2</sup>Piscataway, NJ/US, <sup>3</sup>US

10:30 - 12:00 Symposium on Epitaxy of Complex Oxides (1 of 11)

Chapel Room

Moderation: H.N. Lee, D. Schlom, L. Martin;

10:30 - 11:00 ENGINEERING CORRELATED DIRAC ELECTRONS IN  $\text{SrIrO}_3/\text{SrTiO}_3$  SUPERLATTICE

H. Takagi<sup>1</sup>, D. Hirai<sup>2</sup>, N. Hiraoka<sup>2</sup>, J. Matsuno<sup>3</sup>; <sup>1</sup>Stuttgart, DE, <sup>2</sup>Tokyo, JP, <sup>3</sup>Wako, JP

11:00 - 11:30 EPITAXIAL GROWTH OF LOW VALENCE TRANSITION-METAL OXIDES EXHIBITING NOVEL ELECTRONIC STATES

A. Ohtomo, Tokyo, JP

11:30 - 12:00 WHAT TO DO WHEN YOUR IDEAL SINGLE CRYSTAL SUBSTRATE IS NOT AVAILABLE: HOW COMBINATORIAL SUBSTRATE EPITAXY OPENS NEW DOORS TO EPITAXIAL SYNTHESIS.

P. Salvador<sup>1</sup>, G. Rohrer<sup>2</sup>, J. Kitchin<sup>2</sup>, W. Prellier<sup>3</sup>; <sup>1</sup>Pittsburgh, US, <sup>2</sup>Pittsburgh, PA/US, <sup>3</sup>Caen, FR

10:30 - 12:00 3rd Symposium on 2D Electronic Materials (4 of 6)

Zia Ballroom

Moderation: K. Gaskill<sup>1</sup>, J.M. Redwing<sup>2</sup>; <sup>1</sup>, <sup>2</sup>University Park, PA/US

10:30 - 11:00 NUCLEATION AND GROWTH OF  $\text{WSe}_2$ : ENABLING LARGE GRAIN TRANSITION METAL DICHALCOGENIDES

C. Hinkle, Richardson, TX/US

11:00 - 11:20 NUCLEATION AND GROWTH KINETICS OF MONOLAYER TUNGSTEN DISELENIDE ( $\text{WSe}_2$ ) FILMS ON SAPPHIRE

X. Zhang<sup>1</sup>, T. Choudhury<sup>2</sup>, B. Jariwala<sup>3</sup>, F. Zhang<sup>3</sup>, N. Alem<sup>3</sup>, J. Robinson<sup>3</sup>, J. Redwing<sup>4</sup>; <sup>1</sup>University Park, PA/US, <sup>2</sup>State College, PA/US, <sup>3</sup>PA/US, <sup>4</sup>

11:20 - 11:40 ATOMIC LAYER AND METALORGANIC CHEMICAL VAPOR DEPOSITION OF  $\text{MoS}_2$  AND  $\text{WS}_2$  FROM BIS(TERT-BUTYLIMIDO)-BIS(DIALKYLAMIDO) COMPOUNDS

B. Kalanyan<sup>1</sup>, J. Maslar<sup>1</sup>, W. Kimes<sup>2</sup>, B. Sperling<sup>2</sup>, R. Kanjolia<sup>3</sup>; <sup>1</sup>Gaithersburg, US, <sup>2</sup>MD/US, <sup>3</sup>US



11:40 - 12:00 **EFFECT OF SAPPHIRE SUBSTRATE ORIENTATION ON NUCLEATION AND GROWTH OF TRANSITION METAL DICHALCOGENIDES**

T. Choudhury<sup>1</sup>, X. Zhang<sup>2</sup>, J. Redwing<sup>2</sup>; <sup>1</sup>State College, PA/US, <sup>2</sup>University Park, PA/US

13:30 - 15:00 Fundamentals of Crystal Growth (5 of 9)

Anasazi Ballroom South

Moderation: P.G. Vekilov, US

13:30 - 14:00 **IN-SITU OBSERVATION OF ICE CRYSTAL SURFACES AT THE MOLECULAR LEVEL BY ADVANCED OPTICAL MICROSCOPY**

G. Sazaki, K. Murata, M. Inomata, J. Chen, K. Nagashima, Y. Furukawa; Sapporo, JP

14:00 - 14:30 **FORMATION AND PROPOGATION OF MACROSTEPS IN THE PRESENCE OF IMPURITIES**

J. Lutsko<sup>1</sup>, M. Sleutel<sup>2</sup>, A. Van Driessche<sup>3</sup>; <sup>1</sup>Brussels, BE, <sup>2</sup>Brussels, Belgium, BE, <sup>3</sup>Grenoble, FR

14:30 - 14:45 **NUCLEATION AND GROWTH OF TWO-DIMENSIONAL ISLANDS OF COLLOIDAL CRYSTALS**

J. Nozawa<sup>1</sup>, S. Uda<sup>2</sup>, S. Guo<sup>1</sup>, J. Okada<sup>2</sup>, H. Koizumi<sup>1</sup>; <sup>1</sup>Sendai, JP, <sup>2</sup>Miyagi, JP

14:45 - 15:00 **HERRING'S SCALING LAW OF DIFFUSION REVISITED**

M. Petrik, Marburg, DE

13:30 - 15:00 Detector Materials (5 of 5)

Anasazi Ballroom North

Moderation: G. Gundiah<sup>1</sup>, M. Zhuravleva<sup>2</sup>; <sup>1</sup>, <sup>2</sup>Knoxville, TN/US

13:30 - 13:45 **FLOATING-ZONE CRYSTAL GROWTH AND CHARACTERIZATION OF THE SCINTILLATOR  $Mg_4Ta_2O_9$**

D. Yuan<sup>1</sup>, D. Perrodin<sup>2</sup>, T. Shalapska<sup>3</sup>, E. Bourret<sup>2</sup>, G. Bizarri<sup>2</sup>; <sup>1</sup>US, <sup>2</sup>Berkeley, CA/US, <sup>3</sup>Berkeley, US

13:45 - 14:00 **HYDROTHERMAL GROWTH AND CHARACTERIZATION OF UO<sub>2</sub> SINGLE CRYSTALS GROWN ON NON-NATIVE SUBSTRATES**

M. Kimani<sup>1</sup>, J. Mann<sup>2</sup>, K. Rickert<sup>3</sup>, J. Petrosky<sup>4</sup>, D. Turner<sup>2</sup>; <sup>1</sup>Ridgecrest, CA/US, <sup>2</sup>Wright-Patterson Afb, OH/US, <sup>3</sup>Oak Ridge, TN/US, <sup>4</sup>OH/US



14:00 - 14:15 GROWTH AND OPTICAL PROPERTIES OF CR-DOPED BETA-GA<sub>2</sub>O<sub>3</sub> CRYSTALS AS RED AND INFRARED SCINTILLATOR BY THE FLOATING ZONE METHOD

S. Kurosawa<sup>1</sup>, T. Shishido<sup>2</sup>, A. Yamaji<sup>3</sup>, T. Horiai<sup>4</sup>, S. Kodama<sup>3</sup>, T. Sugawara<sup>3</sup>, A. Nomura<sup>2</sup>, K. Yubuta<sup>2</sup>, Y. Ohashi<sup>5</sup>, Y. Yokota<sup>3</sup>, K. Kamada<sup>3</sup>, A. Yoshikawa<sup>3</sup>, A. Ohnishi<sup>1</sup>, M. Kitaura<sup>1</sup>; <sup>1</sup>Yamagata, JP, <sup>2</sup>JP, <sup>3</sup>Sendai, JP, <sup>4</sup>, <sup>5</sup>Sendai, Miyagi, JP

14:15 - 14:30 HYDROTHERMAL GROWTH OF THO<sub>2</sub>, UXTH1-XO<sub>2</sub> AND UO<sub>2</sub> SINGLE CRYSTALS FOR NEUTRON DETECTION

J. Mann<sup>1</sup>, M. Kimani<sup>2</sup>, C. Dugan<sup>3</sup>, C. Young<sup>4</sup>, K. Rickert<sup>5</sup>, J. Petrosky<sup>4</sup>; <sup>1</sup>Wright-Patterson Afb, OH/US, <sup>2</sup>Ridgecrest, CA/US, <sup>3</sup>US, <sup>4</sup>OH/US, <sup>5</sup>Oak Ridge, TN/US

14:30 - 14:45 **SOLUTION GROWTH AND SCINTILLATION PROPERTIES OF 9-PHENYLCARBAZOLE**

E. Van Loef, G. Markosyan, U. Shirwadkar, M. McClish, K. Shah; Watertown, MA/US

14:45 - 15:00 RECENTLY DEVELOPED UNIDIRECTIONAL ORGANIC SINGLE CRYSTAL CYLINDERS FOR SCINTILLATOR APPLICATION

K. Sankaranarayanan, Karaikudi, IN

13:30 - 15:00 3rd Symposium on 2D Electronic Materials (4 of 6) Zia Ballroom  
Moderation: K. Gaskill<sup>1</sup>, J.M. Redwing<sup>2</sup>; <sup>1</sup>, <sup>2</sup>University Park, PA/US

13:30 - 14:00 GROWTH-MICROSTRUCTURE-(ELECTRONIC)PROPERTY CORRELATIONS IN 2D MATERIALS.

S. Raghavan, Bangalore, IN

14:00 - 14:20 GROWTH OF LARGE-AREA, SINGLE-CRYSTAL GRAPHENE AND GRAPHENE BILAYERS FOR ELECTRONIC DEVICES

Y. Hao,

14:20 - 14:40 SYNTHESIS AND CHARACTERIZATION OF GRAPHENE BASED THERMOACOUSTIC DEVICES

N. Sbrockey<sup>1</sup>, T. Salagaj<sup>1</sup>, T. Kalkur<sup>2</sup>, G. Tompa<sup>1</sup>; <sup>1</sup>Piscataway, US, <sup>2</sup>US

14:40 - 15:00 MECHANISMS OF HYDROGEN INTERCALATION IN EPITAXIAL GRAPHENE

K. Daniels<sup>1</sup>, A. Boyd<sup>2</sup>, A. Nath<sup>3</sup>, R. Myers-Ward<sup>2</sup>, K. Gaskill<sup>4</sup>; <sup>1</sup>Washington, US, <sup>2</sup>DC/US, <sup>3</sup>VA/US, <sup>4</sup>





13:30 - 15:00 Symposium on Epitaxy of Complex Oxides (2 of 11) Chapel Room  
Moderation: H.N. Lee, D. Schlom, L. Martin;

13:30 - 14:00 NEW STRAIN STATES IN EPITAXIAL COMPLEX OXIDES  
J. Macmanus-Driscoll<sup>1</sup>, A. Suwardi<sup>1</sup>, H. Wang<sup>2</sup>, A. Chen<sup>3</sup>, Q. Jia<sup>4</sup>; <sup>1</sup>Cambridge, GB,  
<sup>2</sup>West Lafayette, Indiana, US, <sup>3</sup>Los Alamos, NM/US, <sup>4</sup>Buffalo, NY/US

14:00 - 14:30 DOPANT SITE STRUCTURE ANALYSIS IN PEROVSKITES  
M. Lippmaa, Kashiwa, JP

14:30 - 15:00 SHARPENED VO<sub>2</sub> PHASE TRANSITION VIA CONTROLLED RELEASE OF  
EPITAXIAL STRAIN  
C. Eom, Madison, US

15:30 - 17:00 Fundamentals of Crystal Growth (6 of 9) Anasazi Ballroom South  
Moderation: P.G. Vekilov, US

15:30 - 16:00 **COLLOIDAL NANOSTRUCTURES: IN-SITU ELECTRON MICROSCOPY  
OF PLASMON-MEDIATED SYNTHESIS, CHEMISTRY AND SELF-  
ASSEMBLY**  
E. Sutter, Lincoln, US

16:00 - 16:30 STEP MORPHOLOGY OF 2D ISLANDS ON THE (110) FACE OF LYSOZYME  
CRYSTALS GROWN IN SPACE  
K. Tsukamoto<sup>1</sup>, H. Miura<sup>2</sup>, H. Hondoh<sup>2</sup>; <sup>1</sup>Suita, JP, <sup>2</sup>JP

15:30 - 17:00 Industrial Crystal Growth Technologies and Equipment (1 Anasazi Ballroom North  
of 2)  
Moderation: M. Whittaker,

15:30 - 16:00 ADVANCES IN SINGLE-CRYSTAL FIBERS AND THIN RODS GROWN BY  
LASER HEATED PEDESTAL GROWTH  
G. Maxwell, San Francisco, US

16:00 - 16:15 MARKET TREND IN THE SAPPHIRE INDUSTRY AND A DISCUSSION FOR  
DEVELOPMENT DIRECTION  
J. Park, M. Jensen, R. Loquist, C. Blockburger, M. Montgomery; Bensenville, IL/US



16:15 - 16:30 SINGLE CRYSTAL GROWTH OF SUBMILLIMETRE DIAMETER SAPPHIRE TUBE BY THE MICRO-PULLING DOWN METHOD FOR ULTRASOUND-FACILITATED DRUG DELIVERY SYSTEM  
K. Kamada<sup>1</sup>, V. Kochurikhin<sup>2</sup>, G. Liudmila<sup>2</sup>, M. Ivanov<sup>2</sup>, Y. Shoji<sup>1</sup>, S. Kurosawa<sup>1</sup>, Y. Ohashi<sup>3</sup>, Y. Yokota<sup>4</sup>, A. Yoshikawa<sup>1</sup>; <sup>1</sup>Sendai, JP, <sup>2</sup>RU, <sup>3</sup>Sendai, Miyagi, JP, <sup>4</sup>JP

16:30 - 16:45 UNIDIRECTIONAL SOLIDIFICATION OF IR/IR-RH FIBER CRYSTALS FOR THERMOCOUPLE BY ALLOY-MICRO-PULLING DOWN METHOD  
R. Murakami<sup>1</sup>, Y. Yokota<sup>1</sup>, K. Kamada<sup>1</sup>, Y. Shoji<sup>2</sup>, S. Kurosawa<sup>1</sup>, Y. Ohashi<sup>3</sup>, A. Yamaji<sup>1</sup>, A. Yoshikawa<sup>1</sup>; <sup>1</sup>Sendai, JP, <sup>2</sup>Miyagi, JP, <sup>3</sup>Sendai, Miyagi, JP

16:45 - 17:00 CRYSTALLIZATION OF ALPHA-LACTOSE MONOHYDRATE ( $\alpha$ -LM) FROM AQUEOUS SOLUTION USING DIFFERENT ORGANIC SOLVENTS  
P. Parimaladevi, K. Vinodhini, S. Karuppanan; Coimbatore, IN

15:30 - 17:20 3rd Symposium on 2D Electronic Materials (6 of 6) Zia Ballroom  
Moderation: K. Gaskill<sup>1</sup>, J.M. Redwing<sup>2</sup>; <sup>1</sup>, <sup>2</sup>University Park, PA/US

15:30 - 16:00 GRAPHENE QUANTUM RESISTANCE STANDARD  
A. Tzalenchuk, Teddington, GB

16:00 - 16:30 POLYMER ASSISTED SUBLIMATION GROWTH OF EPITAXIAL GRAPHENE FOR QUANTUM RESISTANCE METROLOGY  
M. Kruskopf<sup>1</sup>, D. Momeni Pakdehi<sup>1</sup>, K. Pierz<sup>1</sup>, S. Wundrack<sup>1</sup>, R. Stosch<sup>1</sup>, T. Dziomba<sup>1</sup>, M. Götz<sup>1</sup>, J. Baringhaus<sup>1</sup>, J. Aprojanz<sup>2</sup>, C. Tegenkamp<sup>2</sup>, J. Lidzba<sup>3</sup>, T. Seyller<sup>3</sup>, F. Hohls<sup>1</sup>, F. Ahlers<sup>1</sup>, H. Schumacher<sup>1</sup>; <sup>1</sup>Braunschweig, DE, <sup>2</sup>Hannover, DE, <sup>3</sup>Chemnitz, DE

16:30 - 16:45 IMPACT OF QUASI-FREE STANDING GRAPHENE EPITAXIAL GRAPHENE ON TERAHERTZ OPTOELECTRONICS  
D. Gaskill<sup>1</sup>, K. Daniels<sup>2</sup>, M. Jadidi<sup>3</sup>, A. Shuskov<sup>3</sup>, A. Boyd<sup>1</sup>, A. Nath<sup>4</sup>, R.L. Myers-Ward<sup>1</sup>, T. Murphy<sup>3</sup>, H.D. Drew<sup>3</sup>; <sup>1</sup>Washington, DC/US, <sup>2</sup>Washington, US, <sup>3</sup>College Park, MD/US, <sup>4</sup>Fairfax, VA/US

16:45 - 17:15 FORMATION OF GRAPHENE NANORIBBONS AND SHEETS BY DIFFUSION OF CARBON IN LIQUID METALS INDUCED BY ELECTROCHARGING ASSISTED PROCESS  
L. Salamanca-Riba<sup>1</sup>, X. Ge<sup>2</sup>, L. Hu<sup>2</sup>, O. Rabin<sup>2</sup>, M. Wuttig<sup>2</sup>, B. Balachandran<sup>3</sup>, D. Cole<sup>4</sup>; <sup>1</sup>College Park, US, <sup>2</sup>College Park, MD/US, <sup>3</sup>Argonne, IL/US, <sup>4</sup>Apg, MD/US



15:30 - 17:30 Symposium on Epitaxy of Complex Oxides (3 of 11) Chapel Room  
Moderation: H.N. Lee, D. Schlom, L. Martin;

15:30 - 16:00 ADVANCED PULSED LASER DEPOSITION  
G. Koster, Enschede, NL

16:00 - 16:30 SYNTHESIS OF FREESTANDING SINGLE-CRYSTAL OXIDE THIN FILMS  
AND HETEROSTRUCTURES  
Y. Hikita, Menlo Park, US

16:30 - 16:45 NON-EQUILIBRIUM SYNTHESIS OF HIGHLY POROUS SINGLE-  
CRYSTALLINE OXIDE NANOSTRUCTURES  
D. Lee, X. Gao, L. Fan, E. Guo, T. Farmer, W. Heller, M. Fitzsimmons, M. Chisholm,  
H.N. Lee; Oak Ridge, TN/US

16:45 - 17:00 TUNING FUNCTIONAL PROPERTIES IN OXIDE NANOCOMPOSITES  
A. Chen<sup>1</sup>, E. Enriquez<sup>1</sup>, H. Wang<sup>2</sup>, J. Macmanus-Driscoll<sup>3</sup>, Q. Jia<sup>4</sup>; <sup>1</sup>Los Alamos,  
NM/US, <sup>2</sup>West Lafayette, Indiana, US, <sup>3</sup>Cambridge, GB, <sup>4</sup>Buffalo, NY/US

17:00 - 17:30 CATION STOICHIOMETRY CONTROL FOR HIGH-QUALITY EPITAXY OF  
COMPLEX OXIDES BY PULSED LASER DEPOSITION  
T. Ohnishi, JP

17:00 - 19:00 Poster Session (2 of 2) Eldorado Grand Ballroom

17:00 - 17:00 SUBMILLIMETER-SIZED NATAO<sub>3</sub> SINGLE CRYSTALS GROWN VIA  
COOLING OF NA<sub>2</sub>MOO<sub>4</sub> FLUX  
S. Suzuki<sup>1</sup>, H. Saito<sup>2</sup>, T. Yamada<sup>2</sup>, K. Teshima<sup>2</sup>; <sup>1</sup>Nagano, JP, <sup>2</sup>JP

17:00 - 17:00 GROWTH ANGLE - A MICROSCOPIC VIEW  
K. Mazuruk<sup>1</sup>, M. Volz<sup>2</sup>, A. Croll<sup>1</sup>; <sup>1</sup>AL/US, <sup>2</sup>Huntsville, AL/US

17:00 - 17:00 POTASSIUM-COBALT SULFIDE CRYSTAL GROWTH ASSISTED BY LOW  
FREQUENCY VIBRATIONS  
A. Sadovskiy, I. Ermochenkov, E. Dubovenko, M. Zykova, E. Sukhanova, I.  
Avetissov; Moscow, RU

17:00 - 17:00 INVESTIGATION OF ENHANCED ROOM TEMPERATURE  
FERROMAGNETISM IN CO DOPED SNO<sub>2</sub> NANOPARTICLES  
R. Renu<sup>1</sup>, R. Ezhil Vizhi<sup>1</sup>, D. Rajan Babu<sup>2</sup>, H. Arul<sup>1</sup>; <sup>1</sup>IN, <sup>2</sup>Vellore, IN



- 17:00 - 17:00 **CALCIUM CARBONATE IN THE SUGAR TECHNOLOGY**  
E. Sarka<sup>1</sup>, Z. Bubnik<sup>2</sup>; <sup>1</sup>Prague 6, CZ, <sup>2</sup>Prague, CZ
- 17:00 - 17:00 **ANALYSIS OF VERTICAL GRADIENT FREEZE (VGF) PROCESS SCALE-UP FOR THE GROWTH OF CADMIUM ZINC TELLURIDE (CZT) SINGLE-CRYSTAL, LARGE-AREA SUBSTRATES**  
J. Roerig<sup>1</sup>, N. Morgan<sup>1</sup>, K. Jones<sup>2</sup>, S. Johnson<sup>2</sup>, J. Derby<sup>1</sup>; <sup>1</sup>Minneapolis, MN/US, <sup>2</sup>Goleta, CA/US
- 17:00 - 17:00 **POCESSING OF CONCENTRATED SOLAR RADIATION PV MODULES ON THE BASIS OF ALGAAS-GAAS HETEROSTRUCTURES**  
I. Trapaidze, G. Goderdzishvili, L. Trapaidze, R. Chikovani; Tbilisi, GE
- 17:00 - 17:00 **AXIAL VIBRATION CONTROL TECHNIQUE FOR CRYSTAL GROWTH FROM LIQUID**  
A. Sadovskiy, V. Kostikov, E. Sukhanova, I. Avetissov; Moscow, RU
- 17:00 - 17:00 **MONTE CARLO STUDY OF THE GROWTH KINETICS DURING MBE OF GAAS ON THE SUBSTRATES WITH DIFFERENT ORIENTATIONS**  
M. Solodovnik, S. Balakirev, O. Ageev, I. Mikhaylin, M. Eremenko; Taganrog, RU
- 17:00 - 17:00 **MODELING THE DEFECT STRUCTURE OF GROWING CRYSTAL USING THE VLASOV MODEL FOR SOLIDS**  
V.I. Talanin, I.E. Talanin, V.I. Lashko; Zaporozhye, UA
- 17:00 - 17:00 **GROWTH OF ZNO NANOROD ARRAYS ON PATTERNED SUBSTRATES**  
J. Grym, O. Černohorský, R. Yatskiv, Š. Chlupová, A. Schenk, N. Bašínová, D. Roesel, J. Vaniš, S. Tiagulskyi; Prague, CZ
- 17:00 - 17:00 **KINETIC MONTE CARLO MODEL OF DROPLET EPITAXY FOR IN/GAAS(001) NANOSTRUCTURES: EXPERIMENTS AND THEORY**  
S. Balakirev, M. Solodovnik, O. Ageev, M. Eremenko, I. Mikhaylin; Taganrog, RU
- 17:00 - 17:00 **SYNTHESIS OF WATER SOLUBLE, LUMINESCENT LFNH NANOCRYSTALS FOR BIOLOGICAL APPLICATIONS**  
M. Khandpekar<sup>1</sup>, T. Attar<sup>2</sup>; <sup>1</sup>Kalyan, IN, <sup>2</sup>Bhiwandi, IN
- 17:00 - 17:00 **HOT-PRESSED PRODUCTION AND LASER PROPERTIES OF FE<sup>2+</sup>:ZNS AND FE<sup>2+</sup>:ZNSE**



R. Avetisov<sup>1</sup>, S. Balabanov<sup>1</sup>, K. Firsov<sup>2</sup>, E. Gavrishchuk<sup>1</sup>, A. Gladilin<sup>2</sup>, V. Ikonnikov<sup>3</sup>,  
V. Kalinushkin<sup>2</sup>, I. Kononov<sup>2</sup>, O. Uvarov<sup>2</sup>, M. Zykova<sup>2</sup>, E. Mozhevitina<sup>2</sup>, D. Savin<sup>1</sup>,  
N. Timofeeva<sup>3</sup>, I. Avetissov<sup>2</sup>; <sup>1</sup>RU, <sup>2</sup>Moscow, RU, <sup>3</sup>Nizhny Novgorod, RU

17:00 - 17:00 **GROWTH OF SCHEELITE-LIKE DISORDERED DOUBLE MOLYBDATE AND TUNGSTATE SINGLE CRYSTALS FROM STOICHIOMETRIC AND NON-STOICHIOMETRIC MELTS**

K. Subbotin, D. Lis, V. Voronov, A. Titov, V. Senin, V. Sanina, E. Zharikov;  
Moscow, RU

17:00 - 17:00 **INFLUENCE OF RAW MATERIALS' PURITY ON GROWTH AND PROPERTIES OF  $\beta$ -BBO CRYSTALS**

A. Sadovskiy<sup>1</sup>, M. Zykova<sup>1</sup>, E. Mozhevitina<sup>1</sup>, A. Khomyakov<sup>1</sup>, A. Ostrovskiy<sup>2</sup>, R. Avetisov<sup>1</sup>, A. Yurkin<sup>2</sup>, I. Avetissov<sup>1</sup>; <sup>1</sup>Moscow, RU, <sup>2</sup>Novosibirsk, RU

17:00 - 17:00 **GROWTH AND CHARACTERIZATION OF PHTHALIC ACID CRYSTALS IN PRESENCE OF HEXAMETHYLENETETRAMINE**

S. Meenakshisundaram, C. Balakrishnan, S. Sivaraman, R. Markkandan, R. Sockalingam; Chidambaram, IN

17:00 - 17:00 **GROWTH AND CHARACTERIZATION OF DIAQUATETRAKIS (1H-IMIDAZOLE-KN3)- MAGNESIUM DICHLORIDE SINGLE CRYSTAL**

H. Arul<sup>1</sup>, N. Suneetha<sup>1</sup>, D. Rajan Babu<sup>2</sup>, R. Ezhil Vizhi<sup>2</sup>; <sup>1</sup>IN, <sup>2</sup>Vellore, IN

17:00 - 17:00 **CYCLOHEXYLAMMONIUM CINNAMATE SINGLE CRYSTAL FOR NONLINEAR OPTICAL APPLICATIONS**

R. Gomathi<sup>1</sup>, S. Madeswaran<sup>1</sup>, D. Rajan Babu<sup>1</sup>, H. Arul<sup>2</sup>; <sup>1</sup>Vellore, IN, <sup>2</sup>IN

17:00 - 17:00 **PECULIARITIES OF BULK  $\text{BaY}_2\text{F}_8$  SINGLE CRYSTALS GROWTH FOR OBTAINING LUMINESCENCE IN THE UV REGION.**

A. Uvarova, A. Pushkar; Moscow, RU

17:00 - 17:00 **SINGLE-CRYSTAL FIBER OF TETRAPHENYLPHOSPHONIUM BROMIDE FOR STIMULATED RAMAN SCATTERING**

Y. Ren, G.Q. Wang, X.T. Tao; Jinan, CN

17:00 - 17:00 **MULTIFRACTAL SPECTRUM INVARIANCE OF SPATIAL NANOFORMS ON THE SURFACE OF  $\text{ZnxCd1-xTe-Si}$  HETEROSTRUCTURES SYNTHESIZED BY VARIOUS TECHNOLOGIES.**

V. Kuznetsov<sup>1</sup>, P. Moskvina<sup>2</sup>, V. Rudnitskiy<sup>2</sup>; <sup>1</sup>Saint-Petersburg, RU, <sup>2</sup>UA



17:00 - 17:00 OPTIMIZATION OF THE INTERFACIAL MISFIT ARRAY GROWTH MODE OF GASB EPILAYERS ON GAAS SUBSTRATE

D. Benyahia<sup>1</sup>, Ł. Kubiszyn<sup>2</sup>, K. Michalczewski<sup>1</sup>, A. Kębłowski<sup>2</sup>, P. Martyniuk<sup>1</sup>, J. Piotrowski<sup>2</sup>, A. Rogalski<sup>1</sup>; <sup>1</sup>Warsaw, PL, <sup>2</sup>Ożarów Mazowiecki, PL

17:00 - 17:00 EX-SITU PROFILING OF TiO<sub>2</sub> FILM GROWTH USING SYNCHROTRON RADIATION

K. Kulinski<sup>1</sup>, D. Steckhahn<sup>1</sup>, B. Gunn<sup>1</sup>, C. Tassone<sup>2</sup>, A. Ichimura<sup>3</sup>; <sup>1</sup>San Francisco, CA/US, <sup>2</sup>Menlo Park, CA/US, <sup>3</sup>San Francisco, Ca, US

17:00 - 17:00 ELECTRICAL CHARACTERIZATION OF ALD DEPOSITED PBTiO<sub>3</sub> THIN FILMS

N. Sbrockey<sup>1</sup>, G. Tompa<sup>1</sup>, A. Welsh<sup>2</sup>, J. Yang<sup>2</sup>, S. Trolier-Mckinsty<sup>2</sup>, R. Polcawich<sup>2</sup>, D. Potrepka<sup>2</sup>; <sup>1</sup>Piscataway, NJ/US, <sup>2</sup>US

19:00 - 21:00 OMVPE of Compound Semiconductors

Anasazi Ballroom South

Moderation: M. Sugiyama,

19:00 - 19:20 III-V NANO-RIDGE GROWTH ON (001) SI FOR OPTOELECTRONICS

B. Kunert<sup>1</sup>, Y. Mols<sup>1</sup>, Y. Shi<sup>2</sup>, D. Van Thourhout<sup>2</sup>, M. Pantouvaki<sup>1</sup>, J. Van Campenhout<sup>1</sup>, R. Langer<sup>2</sup>; <sup>1</sup>Leuven, BE, <sup>2</sup>Ghent, BE

19:20 - 19:40 DEGRADATION BEHAVIOR OF LASER DIODES WITH HIGHLY STRAINED INGAAS QWS WITH EMISSION WAVELENGTH BETWEEN 1120 NM AND 1180 NM

F. Bugge, G. Blume, D. Feise, N. Werner, K. Paschke, M. Weyers; Berlin, DE

19:40 - 20:00 EXTREMELY RAPID GAAS GROWTH BY MOVPE FOR LOW-COST PV APPLICATIONS

A. Ubukata<sup>1</sup>, H. Sodabanlu<sup>2</sup>, K. Watanabe<sup>2</sup>, S. Koseki<sup>1</sup>, Y. Yano<sup>1</sup>, T. Tabuchi<sup>1</sup>, T. Sugaya<sup>1</sup>, K. Matsumoto<sup>1</sup>, Y. Nakano<sup>2</sup>, M. Sugiyama<sup>2</sup>; <sup>1</sup>Tsukuba, JP, <sup>2</sup>Tokyo, JP

20:00 - 20:20 SETUP FOR IN-SITU ELECTRON MICROSCOPIC STUDIES OF SEMICONDUCTOR GROWTH

K. Volz, Marburg, DE

20:20 - 20:40 PHOTOLUMINESCENCE EXCITATION SPECTROSCOPY OF ANTIMONY DONORS IN ZINC OXIDE

S. Watkins, F. Mohammadbeigi, S. Kumar, K. Stirling; Burnaby, BC/CA



20:40 - 21:00 SPATIO-TIME-RESOLVED CATHODOLUMINESCENCE STUDY OF THICK III-POLAR AND N-POLAR INGAN  
Z. Al Balushi, J. Redwing; University Park, PA/US

08-02-2017

08:00 - 10:00 Fundamentals of Crystal Growth (7 of 9) Anasazi Ballroom South  
Moderation: P.G. Vekilov, US

08:00 - 08:30 THE SYNERGY OF MODELING AND NOVEL EXPERIMENTS FOR MELT CRYSTAL GROWTH RESEARCH  
J. Derby, Minneapolis, MN/US

08:30 - 09:00 **GROWTH AND SCINTILLATION PROPERTIES OF CE:LA<sub>2</sub>CL<sub>3</sub>/AECL<sub>2</sub> (AE=MG, CA, SR, BA) EUTECTICS FOR X-RAY IMAGING APPLICATIONS**  
A. Yoshikawa<sup>1</sup>, K. Kamada<sup>1</sup>, Y. Furuya<sup>2</sup>, S. Kurosawa<sup>3</sup>, A. Yamaji<sup>1</sup>, Y. Shoji<sup>4</sup>, Y. Ohashi<sup>5</sup>, Y. Yokota<sup>1</sup>; <sup>1</sup>Sendai, JP, <sup>2</sup>Sendai,miyagi, JP, <sup>3</sup>JP, <sup>4</sup>Miyagi, JP, <sup>5</sup>Sendai, Miyagi, JP

09:00 - 09:30 GROWTH OF MOLECULAR SYSTEMS  
F. Schreiber, Tuebingen, DE

09:30 - 09:45 DISLOCATION AIDED ORIENTATION ALIGNMENT DURING INITIAL STAGES OF CRYSTAL GROWTH  
A. Samanta<sup>1</sup>, A. Lange<sup>1</sup>, T. Olson<sup>2</sup>, S. Elhadj<sup>2</sup>; <sup>1</sup>CA/US, <sup>2</sup>Livermore, CA/US

09:45 - 10:00 **TWINNING DURING CZOCHRALSKI GROWTH OF HEAVILY-DOPED, DISLOCATION-FREE SINGLE CRYSTAL SILICON**  
J. Kearns, Cleveland, OH/US

08:00 - 10:00 Ferroelectric crystals and textured ceramics (1 of 3) Zia Ballroom  
Moderation: J. Luo<sup>1</sup>, R.J. Meyer<sup>2</sup>; <sup>1</sup>State College, US, <sup>2</sup>University Park, PA/US

08:00 - 08:30 RECENT DEVELOPMENTS AND UNDERSTANDING OF HIGH-PERFORMANCE PIEZO-/FERROELECTRIC SINGLE CRYSTALS OF COMPLEX PEROVSKITE  
Z. Ye, Burnaby, BC/CA

08:30 - 09:00 CRYSTAL GROWTH AND DOMAIN MEMORY EFFECT OF PMN-PT NEAR MPB



Q. Li, C. Xu; Beijing, CN

09:00 - 09:15 **GROWTH, SIMULATION AND PROPERTIES CHARACTERIZATION OF LARGE SIZE  $PB(IN_{1/2}NB_{1/2})O_3$ - $PB(MG_{1/3}NB_{2/3})O_3$ - $PBTIO_3$  SINGLE CRYSTAL BY MODIFIED BRIDGEMAN METHOD**

K. Song<sup>1</sup>, Z. Xu<sup>2</sup>, Z. Li<sup>1</sup>, F. Li<sup>3</sup>, S. Fan<sup>1</sup>, S. Wang<sup>1</sup>, H. Guo<sup>1</sup>, M. Ma<sup>1</sup>, Y. Liu<sup>1</sup>; <sup>1</sup>Xian, CN, <sup>2</sup>CN, <sup>3</sup>US

09:15 - 09:30 HIGH CURIE-TEMPERATURE ( $T_C$ ) PIEZO-/FERROELECTRIC SINGLE CRYSTALS WITH BISMUTH-BASED COMPLEX PEROVSKITES: GROWTH, STRUCTURES AND PROPERTIES

Z. Ye, Z. Liu, H. Wu, A. Paterson; Burnaby, BC/CA

09:30 - 09:45 LEAD-FREE CRYSTAL GROWTH: FROM KTN TO KNN

H. Tian, P. Tan; Harbin, CN

09:45 - 10:00 COMPOSITION DESIGN AND PIEZOELECTRIC PROPERTY OF PURE  $KXNA1-XNBO_3$  SINGLE CRYSTAL FABRICATED BY SEED-FREE SOLID-STATE CRYSTAL GROWTH

M. Jiang, C. Hao, Z. Gu; Guilin, CN

08:00 - 10:00 Thin Film Growth, Epitaxy, and Superlattices (1 of 2)

Anasazi Ballroom North

Moderation: A.B. Krysa<sup>1</sup>, T. Garrod<sup>2</sup>; <sup>1</sup>Sheffield, GB, <sup>2</sup>

08:00 - 08:00 GROWTH, STABILITY, AND APPLICATIONS OF  $GAAS_{1-x}BI_x$  MATERIALS THROUGH THE LENS OF MICROSTRUCTURAL DEVELOPMENT

S. Babcock<sup>1</sup>, T. Kuech<sup>2</sup>, L. Mawst<sup>3</sup>, D. Morgan<sup>4</sup>, W. Chen<sup>2</sup>, K. Forghani<sup>1</sup>, Y. Guan<sup>2</sup>, H. Kim<sup>2</sup>, G. Luo<sup>1</sup>, A. Wood<sup>1</sup>; <sup>1</sup>WI/US, <sup>2</sup>Madison, WI/US, <sup>3</sup>, <sup>4</sup>Madison, US

08:00 - 08:00 EPITAXIAL GROWTH OF III-V QUANTUM DOT LASERS ON SILICON SUBSTRATES FOR SILICON PHOTONICS

H. Liu, GB

08:00 - 08:00 INTERFACE ANALYSIS FOR STRAINED LAYER SUPERLATTICES BY ATOM PROBE TOMOGRAPHY

A. Rajeev, W. Chen, J. Kirch, S. Babcock, L. Mawst, T. Kuech, T. Earles; Madison, WI/US





08:00 - 08:00 **SUBSTRATE EVALUATION FOR HIGH QUALITY BORON PHOSPHIDE GROWTH**

Y. Yang<sup>1</sup>, X. Wang<sup>2</sup>, J. Guo<sup>3</sup>, B. Raghoechar<sup>2</sup>, M. Dudley<sup>4</sup>, B. Padavala<sup>2</sup>, C. Frye<sup>2</sup>, J. Edgar<sup>2</sup>; <sup>1</sup>, <sup>2</sup>US, <sup>3</sup>Port Jefferson Station, NY/US, <sup>4</sup>Stony Brook, NY/US

08:00 - 08:00 **GROWTH, TRANSFER, AND CHARACTERIZATION OF GE AND SIGE NANOMEMBRANES ON III-V SUBSTRATES**

A. Bhat<sup>1</sup>, X. Cui<sup>1</sup>, Y. Guan<sup>1</sup>, S. Scott<sup>1</sup>, T. Kuech<sup>2</sup>, M. Lagally<sup>1</sup>; <sup>1</sup>Madison, US, <sup>2</sup>Madison, WI/US

08:00 - 10:00 Symposium on Epitaxy of Complex Oxides (4 of 11)

Chapel Room

Moderation: H.N. Lee, D. Schlom, L. Martin;

08:00 - 08:15 **HIGH MOBILITY BASNO<sub>3</sub> FILMS GROWN BY MOLECULAR BEAM EPITAXY AND FIELD EFFECT TRANSISTOR**

J. Park, H. Paik, D. Jena, D. Schlom; Ithaca, NY/US

08:15 - 08:30 **ADSORPTION-CONTROLLED GROWTH OF LA-DOPED BASNO<sub>3</sub> BY MOLECULAR-BEAM EPITAXY**

H. Paik<sup>1</sup>, Z. Chen<sup>2</sup>, E. Lochocki<sup>3</sup>, A. Seidner<sup>1</sup>, A. Verma<sup>3</sup>, N. Tanen<sup>1</sup>, J. Park<sup>2</sup>, M. Uchida<sup>4</sup>, S. Shang<sup>3</sup>, B. Zhou<sup>3</sup>, Z. Liu<sup>3</sup>, D. Jena<sup>2</sup>, K. Shen<sup>3</sup>, D. Muller<sup>3</sup>, D. Schlom<sup>1</sup>; <sup>1</sup>Ithaca, US, <sup>2</sup>Ithaca, NY/US, <sup>3</sup>US, <sup>4</sup>JP

08:30 - 09:00 **NOVEL RADICAL-BASED MOLECULAR BEAM EPITAXY APPROACH FOR METAL OXIDE FILMS CONTAINING ELEMENTS OF LOW OXIDATION POTENTIAL**

B. Jalan, Minneapolis, MN/US

09:00 - 09:30 **SYNTHESIS STRATEGIES FOR CONTROLLING THE IN-PHASE OCTAHEDRAL ROTATION AXIS IN *PBNM*-TYPE PEROVSKITES**

S. May, Philadelphia, PA/US

09:30 - 10:00 **PUSHING THE ENVELOPE ON UNDERSTANDING AND SUPPRESSING ATOM AND ION DIFFUSION ACROSS COMPLEX OXIDE INTERFACES**

S. Chambers, S. Spurgeon, Y. Du, P. Sushko; Richland, WA/US

10:30 - 12:00 Fundamental of Crystal Growth (8 of 9)

Anasazi Ballroom South

Moderation: P.G. Vekilov, US



10:30 - 11:00 **THE GROWTH AND DECOMPOSITION OF METASTABLE SEMICONDUCTING ALLOYS**

T. Kuech<sup>1</sup>, Y. Guan<sup>1</sup>, S. Babcock<sup>1</sup>, L. Mawst<sup>2</sup>, D. Morgan<sup>3</sup>, G. Luo<sup>2</sup>; <sup>1</sup>Madison, WI/US, <sup>2</sup>WI/US, <sup>3</sup>Madison, US

11:00 - 11:30 **THERMODYNAMICS OF DEPOSITION-FLUX DEPENDENT INTRINSIC FILM STRESS**

M.J. Rost, A. Saedi; Leiden, NL

11:30 - 11:45 **STRESS-DIRECTED COMPOSITIONAL PATTERNING OF COMPOUND SEMICONDUCTORS AND STRESS MAPPING BY 2D MICRO-RAMAN IMAGING**

B. Rummel, M. Rimada, S. Han; Albuquerque, NM/US

11:45 - 12:00 **EFFECT OF MASK ORIENTATION AND GROWTH PARAMETERS ON THE EPITAXIAL LATERAL OVERGROWTH OF GAN ON FREE-STANDING NONPOLAR SUBSTRATES**

S. Mishkat-Ul-Masabih<sup>1</sup>, A. Aragon<sup>1</sup>, M. Monavarian<sup>2</sup>, D. Feezell<sup>1</sup>; <sup>1</sup>Albuquerque, US, <sup>2</sup>Albuquerque, NM/US

10:30 - 12:00 Bulk Crystal Growth (1 of 5)

Zia Ballroom

Moderation: R.S. Feigelson<sup>1</sup>, A. Ostrogorsky<sup>2</sup>; <sup>1</sup>CA/US, <sup>2</sup>

10:30 - 11:00 **IN SITU DIAGNOSTICS OF SCINTILLATOR CRYSTAL GROWTH PROVIDED BY ENERGY-RESOLVED NEUTRON IMAGING**

A. Tremsin<sup>1</sup>, D. Perrodin<sup>2</sup>, A. Losko<sup>3</sup>, S. Vogel<sup>4</sup>, M. Bourke<sup>3</sup>, J. Peterson<sup>5</sup>, J. Derby<sup>5</sup>, T. Shinohara<sup>6</sup>, G. Bizarri<sup>7</sup>, E. Bourret<sup>2</sup>; <sup>1</sup>, <sup>2</sup>Berkeley, CA/US, <sup>3</sup>NM/US, <sup>4</sup>Los Alamos, NM/US, <sup>5</sup>Minneapolis, MN/US, <sup>6</sup>JP, <sup>7</sup>Berkeley, US

11:00 - 11:15 **FINITE-ELEMENT MODELING OF SCINTILLATOR CRYSTAL GROWTH WITHIN A BRIDGMAN FURNACE IMAGED VIA NEUTRON SCATTERING**

C. Zhang<sup>1</sup>, J. Peterson<sup>1</sup>, J. Seebeck<sup>1</sup>, A. Tremsin<sup>2</sup>, D. Perrodin<sup>3</sup>, G. Bizarri<sup>3</sup>, E. Bourret<sup>4</sup>, S. Vogel<sup>5</sup>, J. Derby<sup>1</sup>; <sup>1</sup>Minneapolis, MN/US, <sup>2</sup>CA/US, <sup>3</sup>Berkeley, US, <sup>4</sup>Berkeley, CA/US, <sup>5</sup>Los Alamos, NM/US

11:15 - 11:30 **PREPARATION AND CHARACTERIZATION OF TERNARY CESIUM HAFNIUM CHLORIDE SINGLE CRYSTALS**

R. Kral<sup>1</sup>, P. Zemenova<sup>2</sup>, A. Bystricky<sup>2</sup>, V. Jary<sup>2</sup>, V. Babin<sup>2</sup>, A. Cihlar<sup>2</sup>, K. Nitsch<sup>2</sup>, P. Veverka<sup>2</sup>, M. Kohoutkova<sup>2</sup>, S. Kodama<sup>3</sup>, S. Kurosawa<sup>4</sup>, Y. Yokota<sup>3</sup>, A. Yoshikawa<sup>3</sup>, M. Nikl<sup>2</sup>; <sup>1</sup>CZ, <sup>2</sup>Prague, CZ, <sup>3</sup>Sendai, JP, <sup>4</sup>JP



11:30 - 12:00 SOLUTION GROWTH OF BULK ORGANIC CRYSTALS

N. Zaitseva<sup>1</sup>, L. Carman<sup>2</sup>, A. Glenn<sup>2</sup>, A. Mabe<sup>2</sup>, S. Payne<sup>2</sup>; <sup>1</sup>Livermore, US,  
<sup>2</sup>Livermore, CA/US

10:30 - 12:00 Thin Film Growth, Epitaxy, and Superlattices

Anasazi Ballroom North

Moderation: A.B. Krysa<sup>1</sup>, T. Garrod<sup>2</sup>; <sup>1</sup>Sheffield, GB, <sup>2</sup>

10:30 - 11:00 HIGH-INDEX-CONTRAST PHOTONIC CRYSTAL (HC-PC) QUANTUM  
CASCADE LASERS FABRICATED BY OMVPE

L. Mawst, C. Sigler, C. Boyle, J. Kirch, D. Lindberg Iii, T. Earles, D. Botez; Madison,  
WI/US

11:00 - 11:20 TUNING PHASE-SEPARATION AND ATOMIC-ORDERING IN ALGAINP FOR  
METAMORPHIC DEVICES

K. Mukherjee<sup>1</sup>, E. Fitzgerald<sup>2</sup>; <sup>1</sup>Santa Barbara, CA/US, <sup>2</sup>Cambridge, MA/US

11:20 - 11:40 DOMAIN EPITAXY IN ANATASE TiO<sub>2</sub>-SAPPHIRE THIN FILM  
HETEROSTRUCTURE: A NOVEL EPITAXIAL MATCH DERIVED FROM  
SOLUTION PHASE SYNTHESIS

M. Martinez<sup>1</sup>, A. Ichimura<sup>2</sup>, C. Tassone<sup>3</sup>; <sup>1</sup>Boulder, CO/US, <sup>2</sup>San Francisco, Ca, US,  
<sup>3</sup>Menlo Park, CA/US

11:40 - 12:00 IN-SITU SURFACE X-RAY SCATTERING INVESTIGATION INTO HYBRID  
OXIDE MOLECULAR BEAM EPITAXY GROWTH MECHANISMS FOR  
PEROVSKITE MATERIALS

T. Andersen<sup>1</sup>, S.Y. Cook<sup>2</sup>, H. Hong<sup>3</sup>, L. Marks<sup>2</sup>, D. Fong<sup>3</sup>; <sup>1</sup>Chicago, US, <sup>2</sup>Evanston,  
IL/US, <sup>3</sup>Argonne, IL/US

10:30 - 12:00 Symposium on Epitaxy of Complex Oxides (5 of 11)

Chapel Room

Moderation: H.N. Lee, D. Schlom, L. Martin;

10:30 - 11:00 OPTOELECTRONIC PROPERTIES OF EPITAXIALLY STRAINED COMPLEX  
OXIDES FROM FIRST PRINCIPLES

S. Reyes-Lillo, J. Neaton; Berkeley, CA/US

11:00 - 11:15 ELASTIC STRAIN ENGINEERING OF PBTIO<sub>3</sub> THIN FILMS GROWN BY  
REACTIVE MOLECULAR-BEAM EPITAXY

E. Langenberg<sup>1</sup>, E. Smith<sup>1</sup>, H. Nair<sup>2</sup>, N. Domingo<sup>3</sup>, G. Catalan<sup>3</sup>, D. Schlom<sup>2</sup>; <sup>1</sup>Ithaca,  
New York, US, <sup>2</sup>Ithaca, NY/US, <sup>3</sup>Bellaterra, Barcelona, ES



11:15 - 11:30 STRAIN CONTROL OF CATIONIC DISTRIBUTION IN  $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ - $\text{BiFeO}_3$  COMPOSITE FILMS

C. Sohn<sup>1</sup>, D. Lee<sup>2</sup>, X. Gao<sup>2</sup>, H.N. Lee<sup>2</sup>; <sup>1</sup>Oak Ridge, US, <sup>2</sup>Oak Ridge, TN/US

11:30 - 12:00 IN SITU SYNCHROTRON X-RAY STUDIES OF COMPLEX OXIDE THIN FILM GROWTH

D. Fong, Argonne, IL/US

08-03-2017

08:00 - 10:00 Fundamentals of Crystal Growth (9 of 9)

Anasazi Ballroom South

Moderation: P.G. Vekilov, US

08:00 - 08:15 REVISITING THE TWINNING MECHANISM IN DIRECTIONAL SOLIDIFICATION OF MULTI-CRYSTALLINE SILICON SHEET

C. Lan, H.K. Lin; Taipei, TW

08:15 - 08:30 GROWTH TEMPERATURE OPTIMIZATION OF GAAS-BASED  $\text{In}_{0.83}\text{Ga}_{0.17}\text{As}$  PHOTODETECTOR STRUCTURES ON  $\text{In}_x\text{Al}_{1-x}\text{As}$  BUFFERS

X. Chen, Y. Gu, Y. Zhang, Y. Ma, S. Xi, B. Du, J. Zhang, Y. Shi, W. Ji, Y. Zhu; Shanghai, CN

08:30 - 08:45 INFLUENCE OF OXYGEN DIFFUSION ON DISLOCATION DENSITY IN SI SINGLE CRYSTAL

S. Nakano, W. Fukushima, H. Harada, Y. Miyamura, K. Kakimoto; Kasuga, JP

08:45 - 09:00 GA(NASSB) CLOSE TO 1 EV GROWN WITH DTBAA

E. Sterzer<sup>1</sup>, N. Lukas<sup>2</sup>, O. Maßmeyer<sup>2</sup>, B. Ringler<sup>2</sup>, C.V. Hänisch<sup>1</sup>, W. Stolz<sup>2</sup>, K. Volz<sup>2</sup>; <sup>1</sup>Marburg, DE, <sup>2</sup>Marburg, DE

09:00 - 09:15 **ON ALLEVIATING MORPHOLOGICAL INSTABILITIES IN THE TRAVELING HEATER METHOD (THM) VIA THE ACCELERATED CRUCIBLE ROTATION TECHNIQUE (ACRT)**

J. Peterson, J. Derby; Minneapolis, MN/US

08:00 - 10:00 Ferroelectric crystals and textured ceramics (2 of 3)

Zia Ballroom

Moderation: J. Luo<sup>1</sup>, R.J. Meyer<sup>2</sup>; <sup>1</sup>State College, US, <sup>2</sup>University Park, PA/US



- 08:00 - 08:30 **TRACKING FERROELECTRIC DOMAIN GROWTH USING LASER SCATTERING TOMOGRAPHY**  
R. Feigelson, H. Lee, R. Demattei; CA/US
- 08:30 - 09:00 **MANUFACTURING AND UNIFORMITY OF GRAIN TEXTURED PIEZOELECTRIC CERAMICS**  
M. Fanton<sup>1</sup>, R. Meyer<sup>2</sup>, E. Kupp<sup>2</sup>, B. Watson<sup>2</sup>, Y. Chang<sup>2</sup>, G. Messing<sup>2</sup>; <sup>1</sup>PA/US, <sup>2</sup>University Park, PA/US
- 09:00 - 09:15 **PROCESSING-ELECTROMECHANICAL PROPERTY RELATIONSHIPS IN TEXTURED PMNT**  
R. Meyer<sup>1</sup>, M. Fanton<sup>2</sup>, G. Messing<sup>1</sup>, E. Kupp<sup>1</sup>, Y. Change<sup>1</sup>, B. Watson<sup>1</sup>; <sup>1</sup>University Park, PA/US, <sup>2</sup>PA/US
- 09:15 - 09:30 **SHEAR PIEZOELECTRIC PROPERTIES OF RELAXOR-PBTIO<sub>3</sub> SINGLE CRYSTALS**  
M. Ma<sup>1</sup>, F. Li<sup>1</sup>, K. Song<sup>2</sup>, Y. Liu<sup>1</sup>, Z. Li<sup>2</sup>, S. Fan<sup>2</sup>, S. Wang<sup>2</sup>, Z. Xu<sup>1</sup>; <sup>1</sup>Xi'an, CN, <sup>2</sup>Xian, CN
- 09:30 - 10:00 **ELECTRO-OPTIC AND NONLINEAR-OPTICAL PROPERTIES OF PB(MG<sub>1/3</sub>NB<sub>2/3</sub>)O<sub>3</sub>-PBTIO<sub>3</sub> SINGLE CRYSTAL**  
Z. Xu<sup>1</sup>, X. Liu<sup>2</sup>, X. Fu<sup>2</sup>, Y. Zhao<sup>2</sup>, W. Zhao<sup>2</sup>, Y. Zhuang<sup>2</sup>, X. Wei<sup>2</sup>, P. Luan<sup>2</sup>; <sup>1</sup>Xi'an, CN, <sup>2</sup>CN

08:00 - 10:00 Bulk Crystal Growth (2 of 5) Eldorado Grand Ballroom (B)  
Moderation: A. Ostrogorsky,

- 08:00 - 08:30 **PROGRESS IN CZOCHRALSKI CRYSTAL GROWTH OF DISLOCATION FREE SILICON, AND POTENTIAL OF CONTINUOUS CZOCHRALSKI FOR NEXT GENERATION SILICON**  
J. Kearns, Cleveland, OH/US
- 08:30 - 08:45 **TOWARDS GRAPHITE-FREE HOT ZONE FOR DIRECTIONAL SOLIDIFICATION OF SILICON**  
N. Dropka<sup>1</sup>, I. Buchovska<sup>1</sup>, I. Herrmann-Geppert<sup>1</sup>, F. Kießling<sup>1</sup>, U. Degenhardt<sup>2</sup>; <sup>1</sup>Berlin, DE, <sup>2</sup>Frankenblick, DE
- 08:45 - 09:00 **NUMERICAL SIMULATION OF THE THERMAL AND FLOW FIELDS FOR A CZOCHRALSKI SILICON GROWTH WITH THE SYMMETRIC OR ASYMMETRIC CUSP-SHAPED MAGNETIC FIELD**



T.H.T. Nguyen<sup>1</sup>, J.C. Chen<sup>2</sup>, C. Hu<sup>2</sup>, C.H. Chen<sup>2</sup>; <sup>1</sup>Taoyuan City, TW, <sup>2</sup>Taoyuan, TW

09:00 - 09:15 INFLUENCE OF CONTAINMENT ON THE GROWTH OF GERMANIUM-SILICON IN MICROGRAVITY

M. Volz<sup>1</sup>, K. Mazuruk<sup>2</sup>, A. Croell<sup>1</sup>, T. Sorgenfrei<sup>3</sup>; <sup>1</sup>Huntsville, AL/US, <sup>2</sup>AL/US, <sup>3</sup>DE

09:15 - 09:30 GROWTH AND CHARACTERIZATION OF LARGE-DIAMETER ZNSE SINGLE CRYSTALS

S. Wang<sup>1</sup>, A. Kopec<sup>1</sup>, A. Timmerman<sup>1</sup>, M. Dudley<sup>2</sup>, B. Raghathamachar<sup>3</sup>; <sup>1</sup>New Milford, CT/US, <sup>2</sup>Stony Brook, NY/US, <sup>3</sup>

09:30 - 09:45 DONOR IMPURITY INCORPORATION DURING LAYER GROWTH OF ZN II-VI SEMICONDUCTORS

D. Barlow, Gainesville, FL/US

09:45 - 10:00 AXIAL INFLECTION POINT TEMPERATURE PROFILES FOR THE ENGINEERING OF CONVEX CRYSTAL GROWTH INTERFACES IN BRIDGMAN SYSTEMS

J. Peterson, J. Derby; Minneapolis, MN/US

08:00 - 10:00 III/V Nitride and Other WBG Semiconductors (1 of 3)      Anasazi Ballroom North  
Moderation: D. Ehrentraut, N. Tansu;

08:00 - 08:40 THICK HVPE GAN FILMS WITH DRAMATICALLY IMPROVED PROPERTIES  
J. Freitas<sup>1</sup>, J. Culbertson<sup>1</sup>, N. Mahadik<sup>1</sup>, S. Wu<sup>2</sup>, B. Raghathamachar<sup>2</sup>, M. Dudley<sup>2</sup>, T. Socacki<sup>3</sup>, M. Bockowski<sup>3</sup>; <sup>1</sup>Washington, DC/US, <sup>2</sup>Stony Brook, NY/US, <sup>3</sup>Warsaw, PL

08:40 - 09:00 SINGLE-CRYSTAL-LIKE III-NITRIDE THIN FILMS DIRECTLY GROWN ON METAL TAPE

J. Ryou<sup>1</sup>, S. Shervin<sup>2</sup>, K. Alam<sup>2</sup>, K. Shervin<sup>2</sup>, S. Kim<sup>2</sup>, T.H. Chung<sup>3</sup>, J. Chen<sup>2</sup>, W. Wang<sup>2</sup>, S. Pouladi<sup>2</sup>, R. Forrest<sup>2</sup>, J. Bao<sup>2</sup>; <sup>1</sup>Houston, TX/US, <sup>2</sup>US, <sup>3</sup>KR

09:00 - 09:20 STRAIN RELAXATION PROPERTIES OF OMVPE-GROWN ALINN SEMICONDUCTORS

W. Sun<sup>1</sup>, R. Song<sup>1</sup>, J. Wierer, Jr.<sup>1</sup>, N. Tansu<sup>2</sup>; <sup>1</sup>Bethlehem, PA/US, <sup>2</sup>PA/US

09:20 - 09:40 THREADING DISLOCATION REDUCTION IN GAN ON SI(111) BY USING THREE DIMENSIONAL ISLAND GROWTH

S. Chang, Hsinchu, TW



08:00 - 10:00 Novel OMVPE Techniques and In-Situ Monitoring Chapel Room  
 Moderation: M. Highland, Argonne, IL/US

08:00 - 08:20 IN SITU COHERENT X-RAY SCATTERING STUDIES DURING OMVPE OF GAN  
G. Ju<sup>1</sup>, D. Xu<sup>1</sup>, M. Highland<sup>1</sup>, A. Ulvestad<sup>1</sup>, C. Thompson<sup>2</sup>, J. Eastman<sup>3</sup>, P. Zapol<sup>1</sup>, A. Yanguas-Gil<sup>1</sup>, P. Fuoss<sup>3</sup>, G. Stephenson<sup>4</sup>; <sup>1</sup>Argonne, IL/US, <sup>2</sup>US, <sup>3</sup>IL/US, <sup>4</sup>Argonne, IL, IL/US

08:20 - 08:40 BROADBAND IN SITU OPTICAL MONITORING FOR OMVPE GROWTH  
G. Atanasoff<sup>1</sup>, C. Metting<sup>2</sup>; <sup>1</sup>Rockville, Md, MD/US, <sup>2</sup>Rockville, MD/US

08:40 - 09:00 CHARACTERIZING AMPOULE PERFORMANCE FOR LOW VAPOR PRESSURE PRECURSOR DELIVERY  
J. Maslar<sup>1</sup>, W. Kimes<sup>1</sup>, B. Sperling<sup>1</sup>, W. Kimmerle<sup>2</sup>, K. Kimmerle<sup>2</sup>; <sup>1</sup>Gaithersburg, US, <sup>2</sup>US

09:00 - 09:20 HIGH TEMPERATURE OMVPE REACTOR WITH REDUCED PREMATURE REACTION AND IMPROVED HEATING EFFICIENCY  
K. Li, H. Alotaibi, X. Li; Thuwal, SA

08:15 - 10:00 Symposium on Epitaxy of Complex Oxides (6 of 11) Eldorado Grand Ballroom (A)  
 Moderation: H.N. Lee, D. Schlom, L. Martin;

08:15 - 08:30 GROWTH OF HIGH QUALITY EPITAXIAL LAALO3 ON SRTIO3 ON (001) SI VIA MOLECULAR-BEAM EPITAXY  
Z. Wang, D. Schlom; Ithaca, NY/US

08:30 - 08:45 **GROWTH OF DEFECT MITIGATING, METASTABLE (SRTIO<sub>3</sub>)<sub>N</sub>(BATIO<sub>3</sub>)<sub>M</sub>SRO SUPERLATTICES**  
N. Dawley<sup>1</sup>, M. Holtz<sup>2</sup>, G. Olsen<sup>2</sup>, X. Lu<sup>2</sup>, N. Orloff<sup>2</sup>, C. Lee<sup>2</sup>, J. Zhang<sup>2</sup>, J. Booth<sup>2</sup>, C. Fennie<sup>2</sup>, D. Muller<sup>2</sup>, D. Schlom<sup>2</sup>; <sup>1</sup>Ithaca, NY/US, <sup>2</sup>US

08:45 - 09:00 STRAIN TUNING OF ELECTRONIC GROUND STATE IN CA<sub>2</sub>RUO<sub>4</sub> EPITAXIAL THIN FILMS  
H. Nair<sup>1</sup>, J. Ruf<sup>2</sup>, Y. Liu<sup>3</sup>, B. Grisafe<sup>2</sup>, N. Shukla<sup>2</sup>, C. Chang<sup>2</sup>, Q. Han<sup>2</sup>, A. Millis<sup>2</sup>, D. Muller<sup>2</sup>, S. Datta<sup>2</sup>, K. Shen<sup>2</sup>, D. Schlom<sup>4</sup>; <sup>1</sup>Ithaca, New York, US, <sup>2</sup>US, <sup>3</sup>CN, <sup>4</sup>Ithaca, NY/US



09:00 - 09:30 SUBSTRATE 'THERMINATION' AND THE ROLE OF SURFACE RECONSTRUCTION FOR THE EPITAXY OF PEROVSKITE OXIDES  
W. Braun, M. Jäger, J. Mannhart; Stuttgart, DE

09:30 - 10:00 MAGNETISM AT INTERFACES IN COMPLEX OXIDES GROWN USING MOLECULAR BEAM EPITAXY  
A. Bhattacharya, Argonne, IL/US

10:30 - 12:00 Bulk Crystal Growth (3 of 5) Eldorado Grand Ballroom (B)  
Moderation: R.S. Feigelson<sup>1</sup>, A. Ostrogorsky<sup>2</sup>; <sup>1</sup>CA/US, <sup>2</sup>

10:30 - 11:00 TWO-INCH, HIGH TRANSPARENCY **ALUMINUM NITRIDE** SINGLE CRYSTAL GROWTH FOR COMMERCIAL APPLICATIONS  
L. Schowalter, R. Bondokov, J. Chen, M. Yoganathan, T. Suzuki, S. Rao, T. Kimura, K. Yamaoka; Green Island, US

11:00 - 11:15 SUBLIMATION GROWTH AND CHARACTERIZATION OF ERBIUM NITRIDE CRYSTALS  
H. Alatabi<sup>1</sup>, B. Padavala<sup>1</sup>, J. Edgar<sup>2</sup>; <sup>1</sup>Manhattan, US, <sup>2</sup>US

11:15 - 11:30 FROM X-RAYS TO NEUTRONS (AND BEYOND): CASE STUDIES OF COMPLEX VANADATES GROWN FROM MICRONS TO CENTIMETERS (AND BEYOND)  
C. McMillen<sup>1</sup>, V. Garlea<sup>2</sup>, M. McGuire<sup>2</sup>, L. Sanjeeva<sup>2</sup>, J. Kolis<sup>1</sup>; <sup>1</sup>Clemson, SC/US, <sup>2</sup>US

11:30 - 11:45 POSSIBLE PRESENCE OF AL-GA COMPLEX IN THE  $Ca_3Ta(Ga,Al)_3Si_2O_{14}$  MELT AND ITS PARTITIONING DURING GROWTH FROM THE MELT  
S. Uda, S. Sakano, C. Koyama, J. Okada; Miyagi, JP

11:45 - 12:00 APPLICATION OF ULTRASOUND FOR CONTROL OF THE SUGAR CRYSTALLIZATION PROCESS  
Z. Bubnik<sup>1</sup>, V. Pour<sup>1</sup>, A. Hinkova<sup>1</sup>, S. Henke<sup>1</sup>, E. Sarka<sup>2</sup>; <sup>1</sup>Prague, CZ, <sup>2</sup>Prague 6, CZ

10:30 - 10:45 Ferroelectric crystals and textured ceramics (3 of 3) Zia Ballroom  
Moderation: J. Luo<sup>1</sup>, R.J. Meyer<sup>2</sup>; <sup>1</sup>State College, US, <sup>2</sup>University Park, PA/US

10:30 - 10:45 PROPERTY MODIFICATION OF RELAXOR-PT CRYSTALS BY ACCEPTOR AND DONOR DOPANTS





J. Luo<sup>1</sup>, S. Taylor<sup>1</sup>, F. Li<sup>2</sup>, S. Zhang<sup>3</sup>, T. Shrouf<sup>2</sup>, W. Hackenberger<sup>1</sup>; <sup>1</sup>State College, US, <sup>2</sup>US, <sup>3</sup>AU

10:30 - 12:00 III/V Nitride and Other WBG Semiconductors (2 of 3) Anasazi Ballroom North  
Moderation: D. Ehrentraut, N. Tansu;

10:30 - 11:10 BASIC AMMONOTHERMAL GROWTH OF BULK GAN IN MOLYBDENUM CAPSULES

S. Pimputkar<sup>1</sup>, J. Speck<sup>2</sup>, S. Nakamura<sup>2</sup>; <sup>1</sup>Bethlehem, PA/US, <sup>2</sup>CA/US

11:10 - 11:30 THE SODIUM FLUX TECHNIQUE FOR BULK GALLIUM NITRIDE

P. Von Dollen<sup>1</sup>, M. Abo Alreesh<sup>2</sup>, S. Pimputkar<sup>3</sup>, H. Albrithen<sup>4</sup>, S. Nakamura<sup>5</sup>, J. Speck<sup>5</sup>; <sup>1</sup>Santa Barbara, US, <sup>2</sup>US, <sup>3</sup>Bethlehem, PA/US, <sup>4</sup>SA, <sup>5</sup>CA/US

11:30 - 11:50 ***IN-SITU* GROWTH MODE CONTROL OF ALN ON SIC SUBSTRATE BY SUBLIMATION CLOSED SPACE TECHNIQUE**

D. Dojima, K. Ashida, T. Kaneko; Sanda, Hyogo, JP

10:30 - 12:00 OMVPE of Narrow Bandgap Semiconductors Chapel Room  
Moderation: S. Watkins, Burnaby, BC/CA

10:30 - 10:50 IMF GROWTH OF GASB ON V-GROOVED SI WITH ASPECT RATIO TRAPPING

B. Lai, Q. Li, K. Lau; HK

10:50 - 11:10 OMVPE GROWTH OF STRAIN-COMPENSATED GAAS<sub>1-y</sub>Py/GAAS<sub>1-x</sub>BI<sub>x</sub> QUANTUM WELL ACTIVE REGION LASERS

H. Kim<sup>1</sup>, Y. Guan<sup>1</sup>, T. Kuech<sup>1</sup>, L. Mawst<sup>2</sup>; <sup>1</sup>Madison, WI/US, <sup>2</sup>

11:10 - 11:30 THERMODYNAMIC STABILITY ANALYSIS OF BI-CONTAINING III-V QUATERNARY ALLOYS AND THE EPITAXIAL STRAIN EFFECTS

Y. Guan<sup>1</sup>, G. Luo<sup>2</sup>, D. Morgan<sup>3</sup>, T. Kuech<sup>1</sup>; <sup>1</sup>Madison, WI/US, <sup>2</sup>WI/US, <sup>3</sup>Madison, US

11:30 - 11:50 GROWTH AND CHARACTERIZATION OF IN<sub>x</sub>GA<sub>1-x</sub>SB METAMORPHIC BUFFER LAYERS BY METAL-ORGANIC VAPOR PHASE EPITAXY ON THE GASB SUBSTRATE

Y. Guan, A. Tan, S. Babcock, L. Mawst, T. Kuech; Madison, WI/US



10:30 - 12:00 Symposium on Epitaxy of Complex Oxides (7 of 11) Eldorado Grand Ballroom (A)  
Moderation: H.N. Lee, D. Schlom, L. Martin;

10:30 - 11:00 HIGH PRESSURE OXYGEN SPUTTER DEPOSITION OF PEROVSKITE OXIDE METALS AND SEMICONDUCTORS

C. Leighton<sup>1</sup>, J. Walter<sup>1</sup>, K. Ganguly<sup>1</sup>, P. Ambwani<sup>1</sup>, S. Bose<sup>1</sup>, P. Xu<sup>1</sup>, A. Prakash<sup>1</sup>, G. Haugstad<sup>1</sup>, J. Gazquez<sup>2</sup>, N. Biskup<sup>2</sup>, M. Varela<sup>2</sup>, J.S. Jeong<sup>1</sup>, A. Mkhoyan<sup>1</sup>, B. Jalan<sup>1</sup>;  
<sup>1</sup>Minneapolis, MN/US, <sup>2</sup>ES

11:00 - 11:30 TUNING OF THE DEPOLARIZATION FIELD, BUILT-IN VOLTAGE AND NANODOMAIN STRUCTURE IN RF-MAGNETRON SPUTTERING GROWN FERROELECTRIC THIN FILMS AND SUPERLATTICES

C. Lichtensteiger<sup>1</sup>, S. Fernandez-Pena<sup>2</sup>, C. Weymann<sup>2</sup>, P. Zubko<sup>3</sup>, P. Paruch<sup>2</sup>, J. Triscone<sup>2</sup>; <sup>1</sup>Geneva 4, CH, <sup>2</sup>Geneva, CH, <sup>3</sup>London, GB

11:30 - 12:00 EPITAXIAL GROWTH OF EXTREME-MOBILITY OXIDES

J. Maria, Raleigh, NC/US

13:30 - 15:15 Bulk Crystal Growth (4 of 5) Eldorado Grand Ballroom (B)  
Moderation: R.S. Feigelson<sup>1</sup>, A. Ostrogorsky<sup>2</sup>; <sup>1</sup>CA/US, <sup>2</sup>

13:30 - 14:00 HIGH PRESSURE FLOATING ZONE GROWTH OF CORRELATED ELECTRON TRANSITION METAL OXIDES

J. Mitchell, J. Zhang, H. Zheng, M. Norman, D. Phelan, A. Botana; Argonne, IL/US

14:00 - 14:15 EFFECT OF MOLTEN-ZONE INSTABILITY ON THE IMPURITY PARTITIONING DURING FZ GROWTH

S. Uda, Y. Takehara, C. Koyama; Miyagi, JP

14:15 - 14:30 SEARCHING FOR IDEAL BI-SYSTEM TOPOLOGICAL INSULATOR, PB-SYSTEM TOPOLOGICAL CRYSTALLINE INSULATOR AND THEIR TOPOLOGICAL SUPERCONDUCTOR

G. Gu, Ny 11973, NY/US

14:30 - 14:45 GROWTH OF 8-HYDROXYQUINOLINE SINGLE CRYSTAL BY MODIFIED CZOCHRALSKI GROWTH TECHNIQUE AND CHARACTERIZATION

S. Kumar, B. Kumar; Delhi, IN



14:45 - 15:00 GROWTH, INTERNAL STRUCTURE AND MECHANICAL PROPERTIES OF PLATINUM FIBER CRYSTALS BY ALLOY-MICRO-PULLING-DOWN METHOD

T. Nihei<sup>1</sup>, Y. Yokota<sup>2</sup>, A. Yamaji<sup>1</sup>, Y. Ohashi<sup>3</sup>, S. Kurosawa<sup>4</sup>, K. Kamada<sup>2</sup>, A. Yoshikawa<sup>2</sup>; <sup>1</sup>Sendai, Miyagi, JP, <sup>2</sup>Sendai, JP, <sup>3</sup>JP, <sup>4</sup>Yamagata, JP

15:00 - 15:15 DETACHED MELT AND VAPOR GROWTH OF INI IN SUBSA FURNACE

A. Ostrogorsky<sup>1</sup>, V. Riabov<sup>2</sup>, M. Volz<sup>3</sup>, L. Van Den Berg<sup>4</sup>, A. Cröll<sup>3</sup>; <sup>1</sup>Kenilworth, IL/US, <sup>2</sup>Chicago, IL/US, <sup>3</sup>Huntsville, AL/US, <sup>4</sup>Largo, FL/US

13:30 - 15:00 Bulk Growth and Epitaxy for Power Electronics (2 of 3)      Anasazi Ballroom South  
Moderation: M. Dudley, B. Raghothamachar;

13:30 - 14:00 INFLUENCE OF CARRIER CONCENTRATION ON BULK LIFETIME IN CZ-SI CRYSTAL

K. Kakimoto, Kasuga, JP

14:00 - 14:30 SIC CRYSTAL GROWTH AND SUBSTRATE TECHNOLOGY FOR DEVICE MANUFACTURING

R. Leonard, Y. Khlebnikov, M. Paisley, S. Bubel, J. Ambati, E. Deyneka, I. Currier, V. Tsvetkov, J. Seaman, A. Powell, M. O'Loughlin, E. Van Brunt, A. Burk, E. Balkas; NC/US

14:30 - 15:00 OMVPE GROWTH OF AL-RICH ALGAN ALLOYS FOR POWER ELECTRONICS

A. Allerman<sup>1</sup>, M. Crawford<sup>2</sup>, G. Pickrell<sup>2</sup>, A. Armstrong<sup>2</sup>, R. Kaplar<sup>2</sup>, J. Dickerson<sup>2</sup>, B. Klein<sup>2</sup>, M. King<sup>2</sup>, M. Van Heukelom<sup>2</sup>; <sup>1</sup>Albuquerque, US, <sup>2</sup>Albuquerque, NM/US

13:30 - 15:00 III/V Nitride and Other WBG Semiconductors (3 of 3)      Anasazi Ballroom North  
Moderation: D. Ehrentraut, N. Tansu;

13:30 - 13:30 PULSED OMVPE GROWTH STUDIES OF INN FOR INTEGRATION IN INGAN ACTIVE REGION

I. Fragkos<sup>1</sup>, W. Sun<sup>2</sup>, D. Borovac<sup>1</sup>, R. Song<sup>1</sup>, J. Wierer, Jr.<sup>1</sup>, N. Tansu<sup>1</sup>; <sup>1</sup>Bethlehem, PA/US, <sup>2</sup>Bethlehem, US

13:30 - 13:30 PROPERTIES OF GAN ON HIGH QUALITY ALN SAPPHIRE TEMPLATE BY USING METALORGANIC CHEMICAL VAPOR DEPOSITION

A. Mishima<sup>1</sup>, Y. Tomita<sup>1</sup>, G. Piao<sup>1</sup>, Y. Yano<sup>2</sup>, T. Tabuchi<sup>2</sup>, K. Matsumoto<sup>2</sup>; <sup>1</sup>Tsukuba-Shi, Ibaraki-ken, JP, <sup>2</sup>Tsukuba, JP



13:30 - 13:30 HIGH-QUALITY N-TYPE GAN GROWN BY HVPE: SI VS O DOPING AND THERMAL CONDUCTIVITY

T. Paskova<sup>1</sup>, P. Paskov<sup>2</sup>, M. Slomski<sup>2</sup>, J. Leach<sup>2</sup>, J. Muth<sup>2</sup>; <sup>1</sup>, <sup>2</sup>US

13:30 - 13:30 DOPED, HIGH MOBILITY CADMIUM OXIDE FILMS FOR TUNABLE PLASMONICS

E. Runnerstrom<sup>1</sup>, J. Maria<sup>2</sup>; <sup>1</sup>Raleigh, US, <sup>2</sup>Raleigh, NC/US

13:30 - 15:00 Symposium on Epitaxy of Complex Oxides (8 of 11) Eldorado Grand Ballroom (A)  
Moderation: H.N. Lee, D. Schlom, L. Martin;

13:30 - 14:00 MAESTRO: A SYNCHROTON BEAMLINE FOR ELECTRONIC STRUCTURE DETERMINATION OF IN-SITU GROWN OXIDES AND 2D MATERIALS

E. Rotenberg, Berkeley, CA/US

14:00 - 14:30 IN SITU X-RAY STUDIES OF EPITAXIAL OXIDE NANOCOMPOSITE FORMATION

M. Highland<sup>1</sup>, D. Fong<sup>1</sup>, H. Zhou<sup>2</sup>, C. Thompson<sup>3</sup>, P. Baldo<sup>2</sup>, J. Eastman<sup>2</sup>, P. Fuoss<sup>2</sup>;  
<sup>1</sup>Argonne, IL/US, <sup>2</sup>IL/US, <sup>3</sup>US

14:30 - 15:00 ISLAND GROWTH DYNAMICS IN PULSED LASER DEPOSITION OF SRTIO<sub>3</sub>

G. Eres, Oak Ridge, TN/US

15:30 - 17:00 Modeling of Crystal Growth Processes (1 of 3) Chapel Room  
Moderation: J.J. Derby, Minneapolis, MN/US

15:30 - 16:00 INSIGHTS INTO THE MATERIALS SCIENCE OF COLLOIDAL CRYSTALS FORMED BY DNA-FUNCTIONALIZED PARTICLES

T. Sinno, I. Jenkins, M. Zanjani, J. Crocker; Philadelphia, US

16:00 - 16:30 DIRECT CALCULATION OF SOLID-LIQUID INTERFACIAL FREE ENERGIES FROM EQUILIBRIUM MOLECULAR DYNAMICS SIMULATIONS.

L. Zepeda-Ruiz, Livermore, CA/US

16:30 - 17:00 ANALYSIS OF RE-MELTING PROCESS OF SILICON GROWN BY TRANSVERSE MAGNETIC FIELD APPLIED CZ METHOD

K. Kakimoto, Kasuga, JP



15:30 - 17:00 Industrial Crystal Growth Technologies and Equipment (2 of 2) Anasazi Ballroom North

Moderation: M. Whittaker,

15:30 - 16:00 REFRACTORY METALS - MATERIAL OF CHOICE FOR SINGLE CRYSTAL GROWTH .

H. Larcher, Reutte, AT

16:00 - 16:15 IMPROVED CARBON AND GRAPHITE MATERIALS FOR CRYSTAL GROWTH  
C. Chen, H. Mayer; Parma, OH/US

16:15 - 16:30 APPLICATION OF HEATER MAGNET MODULE FOR IMPROVED CRYSTAL GROWTH OF SEMICONDUCTORS

C. Frank-Rotsch<sup>1</sup>, I. Buchovska<sup>1</sup>, N. Dropka<sup>1</sup>, R. Zwierz<sup>1</sup>, P. Rudolph<sup>2</sup>, F. Kießling<sup>1</sup>;  
<sup>1</sup>Berlin, DE, <sup>2</sup>Schoenefeld, DE

16:30 - 16:45 TEMPERATURE UNIFORMITY OF INDUCTION-HEATED OMVPE SUSCEPTORS AT HIGH TEMPERATURE

K. Li, H. Alotaibi, X. Li; Thuwal, SA

16:45 - 17:00 A SMALL BUSINESS PERSPECTIVE ON INDUSTRIAL CRYSTAL GROWTH  
C. Lynch<sup>1</sup>, T. Caughey<sup>2</sup>, S. Selin<sup>2</sup>, T. Inzalaco<sup>2</sup>; <sup>1</sup>Northvale, US, <sup>2</sup>NJ/US

15:30 - 17:20 Bulk Growth and Epitaxy for Power Electronics (3 of 3) Anasazi Ballroom South  
Moderation: M. Dudley, B. Raghathamachar;

15:30 - 16:00 LATEST PROGRESS IN GALLIUM OXIDE EPITAXIAL GROWTH TECHNOLOGIES FOR POWER DEVICES

M. Higashiwaki<sup>1</sup>, Y. Nakata<sup>1</sup>, M.H. Wong<sup>1</sup>, K. Konishi<sup>1</sup>, T. Kamimura<sup>1</sup>, K. Goto<sup>2</sup>, K. Sasaki<sup>2</sup>, A. Kuramata<sup>2</sup>, S. Yamakoshi<sup>2</sup>, H. Murakami<sup>1</sup>, Y. Kumagai<sup>1</sup>; <sup>1</sup>Tokyo, JP, <sup>2</sup>Saitama, JP

16:00 - 16:30 FAST CVD CRYSTAL GROWTH OF 4H-SIC FOR POWER DEVICES

H. Tsuchida, I. Kamata, M. Ito, T. Miyazawa, N. Hoshino; Yokosuka, Kanagawa, JP

16:30 - 17:00 GROWTH AND CHARACTERIZATION OF SIC

B. Raghathamachar<sup>1</sup>, M. Dudley<sup>1</sup>, Y. Yang<sup>2</sup>, J. Guo<sup>1</sup>; <sup>1</sup>Stony Brook, NY/US, <sup>2</sup>



17:00 - 17:20 UNDERSTANDING THE MICROSTRUCTURES OF TRIANGULAR DEFECTS IN 4H-SiC HOMOEPITAXIAL LAYERS GROWN BY CVD METHOD

J. Guo<sup>1</sup>, Y. Yang<sup>2</sup>, J. Kim<sup>3</sup>, T.J. Kim<sup>2</sup>, B. Raghathamachar<sup>4</sup>, M. Dudley<sup>5</sup>; <sup>1</sup>Port Jefferson Station, NY/US, <sup>2</sup>Stony Brook, NY/US, <sup>3</sup>Daejeon, KR, <sup>4</sup>, <sup>5</sup>US

15:30 - 17:00 Symposium on Epitaxy of Complex Oxides (9 of 11) Eldorado Grand Ballroom (A)  
Moderation: H.N. Lee, D. Schlom, L. Martin;

15:30 - 16:00 CRYSTALLIZATION BY PARTICLE ATTACHMENT OF METASTABLE NANOPARTICLES IN PULSED LASER DEPOSITION

D. Geohegan, Oak Ridge, TN/US

16:00 - 16:30 PROBING INTERFACIAL SUPERCONDUCTIVITY IN FE-BASED SUPERCONDUCTORS BY IN-SITU ARPES

H. Ding, Beijing, CN

16:30 - 16:45 TUNING THE SUPERCONDUCTIVITY IN SINGLE-LAYER FESE/OXIDES BY INTERFACE ENGINEERING

H. Xu<sup>1</sup>, R. Peng<sup>1</sup>, D. Feng<sup>2</sup>; <sup>1</sup>Shanghai, CN, <sup>2</sup>CN

16:45 - 17:00 RAPID-ANNEAL SOLID PHASE EPITAXY OF ATOMICALLY FLAT HIGH SURFACE ENERGY RuO<sub>2</sub>(001) FILMS

P. Snijders<sup>1</sup>, Y. Wang<sup>1</sup>, Y. Song<sup>1</sup>, R. Peng<sup>1</sup>, A. Herklotz<sup>1</sup>, M. Chisholm<sup>1</sup>, Z. Wu<sup>1</sup>, T. Ward<sup>1</sup>, H. Weitering<sup>2</sup>; <sup>1</sup>Oak Ridge, US, <sup>2</sup>TN/US

08-04-2017

08:00 - 10:00 Modeling of Crystal Growth Processes (2 of 3) Eldorado Grand Ballroom (B)  
Moderation: J.J. Derby, Minneapolis, MN/US

08:00 - 08:30 PHASE FIELD MODELING OF GRAIN STRUCTURE EVOLUTION DURING DIRECTIONAL SOLIDIFICATION OF MULTI-CRYSTALLINE SILICON SHEET

C. Lan, H.K. Lin; Taipei, TW

08:30 - 08:45 OPTIMIZATION OF HEAT TRANSFER DURING THE DIRECTIONAL SOLIDIFICATION PROCESS OF 1600 KG SILICON FEEDSTOCK CAPACITY

H. Chieh<sup>1</sup>, J. Chen<sup>1</sup>, T.H.T. Nguyen<sup>2</sup>, H. Zhi Zhong<sup>1</sup>, C.H. Chen<sup>3</sup>; <sup>1</sup>Taoyuan City, TW, <sup>2</sup>Taoyuan, TW, <sup>3</sup>TW



08:45 - 09:00 CONTROL OF CRUCIBLE MOVEMENT ON MELTING PROCESS AND CARBON CONTAMINATION IN CZOCHRALSKI SILICON CRYSTAL GROWTH

X. Liu<sup>1</sup>, X. Han<sup>2</sup>, S. Nakano<sup>2</sup>, K. Kakimoto<sup>2</sup>; <sup>1</sup>Fukuoka, JP, <sup>2</sup>Kasuga, JP

09:00 - 09:15 ANALYSIS OF THE FLOATING SILICON METHOD (FSM) FOR THE HORIZONTAL GROWTH OF CRYSTALLINE SILICON RIBBONS

K. Wang, J. Derby; Minneapolis, MN/US

09:15 - 09:30 3D GLOBAL MODELING OF INDUCTION HEATING OF SILICON IN THE FLOATING ZONE PROCESS

X. Han<sup>1</sup>, S. Nakano<sup>1</sup>, X. Liu<sup>2</sup>, K. Kakimoto<sup>1</sup>; <sup>1</sup>Kasuga, JP, <sup>2</sup>Fukuoka, JP

09:30 - 10:00 ANALYSIS OF THE V/G CRITERION IN SI SINGLE CRYSTAL GROWTH

F. Dupret, Ottignies-Louvain-la-neuve, BE

08:00 - 10:00 Nanocrystals, Quantum Dots, and Nanowires (1 of 2)

Zia Ballroom

Moderation: K. Bertness<sup>1</sup>, D. Feezell<sup>2</sup>; <sup>1</sup>Boulder, CO/US, <sup>2</sup>

08:00 - 08:30 THREE-DIMENSIONAL, HIGH ASPECT RATIO GAN NANOSTRUCTURES BY TOP-DOWN ETCHING

G. Wang<sup>1</sup>, B. Leung<sup>2</sup>, M. Tsai<sup>3</sup>, C. Li<sup>2</sup>, G. Balakrishnan<sup>1</sup>; <sup>1</sup>Albuquerque, US, <sup>2</sup>Albuquerque, NM/US, <sup>3</sup>Albuquerque, NM/US

08:30 - 08:50 EFFECT OF ALGAN UNDERLAYER ON REVERSE-LEAKAGE CURRENT REDUCTION IN GAN/INGAN CORE-SHELL NANOSTRUCTURE LIGHT-EMITTING DIODES

M. Nami, A. Rishinaramangalam, D. Shima, G. Balakrishnan, S. Brueck, D. Feezell; Albuquerque, US

08:50 - 09:10 POLARITY INVERSION IN EPITAXIAL ALN: NEW INSIGHTS IN OBTAINING SELECTIVE AREA EPITAXY OF GA-POLAR GAN-ON-SILICON

K. Bertness, M. Brubaker, A. Roshko, J. Weber, T. Harvey, P. Blanchard, B. Spann, N. Sanford; Boulder, CO/US

09:10 - 09:30 QUANTUM SIZE CONTROLLED ETCHING OF INGAN QUANTUM DOTS

G. Wang<sup>1</sup>, B. Leung<sup>1</sup>, X. Xiao<sup>1</sup>, A. Fischer<sup>1</sup>, D. Koleske<sup>1</sup>, P. Lu<sup>1</sup>, M. Tsai<sup>2</sup>, M. Coltrin<sup>1</sup>, J. Tsao<sup>1</sup>; <sup>1</sup>Albuquerque, NM/US, <sup>2</sup>Albuquerque, NM/US



09:30 - 10:00 SELF-ASSEMBLED GROWTH OF GAN NANOWIRES ON METALLIC SUBSTRATES

L. Geelhaar, Berlin, DE

08:00 - 10:00 Materials for Photovoltaics and Energy Technology (1 of 1) Anasazi Ballroom North  
Moderation: J.F. Geisz, Golden, CO/US

08:00 - 08:20 LOW COST III-V PHOTOVOLTAICS BY HYDRIDE VAPOR PHASE EPITAXY

K. Schulte<sup>1</sup>, J. Simon<sup>2</sup>, N. Jain<sup>2</sup>, J. Mangum<sup>2</sup>, C. Packard<sup>2</sup>, B. Gorman<sup>2</sup>, A. Ptak<sup>2</sup>; <sup>1</sup>,  
<sup>2</sup>CO/US

08:20 - 08:40 FIRST BIFACIAL GROWTH AND BIFACIAL EPITAXIAL LIFT OFF (B-ELO) OF 3J SOLAR CELLS ON 6 INCH GAAS SUBSTRATES

K. Forghani, A. Wibowo, C. Stender, J. Wood, N. Pan; Niles, IL/US

08:40 - 09:00 ELECTRON CHANNELING CONTRAST IMAGING OF GAINP/GAAS/SI SOLAR CELLS

R. France<sup>1</sup>, M. Feifel<sup>2</sup>, J. Ohlmann<sup>2</sup>, D. Lackner<sup>2</sup>, F. Dimroth<sup>2</sup>; <sup>1</sup>Golden, US, <sup>2</sup>DE

09:00 - 09:20 GROWTH OF GAASPN P-I-N JUNCTIONS ON SI SUBSTRATES WITH LATTICE MATCHING CONDITIONS FOR MONOLITHIC III-V/SI MULTI-JUNCTION SOLAR CELLS

K. Yamane, K. Sato, M. Goto, K. Takahashi, H. Sekiguchi, H. Okada, A. Wakahara; Toyohashi, Aichi, JP

09:20 - 09:40 SELECTIVE AREA GROWTH OF GAAS ON SI FOR PHOTOVOLTAIC APPLICATIONS

M. Vaisman<sup>1</sup>, N. Jain<sup>2</sup>, Q. Li<sup>3</sup>, K. Lau<sup>3</sup>, E. Makoutz<sup>4</sup>, W. McMahon<sup>4</sup>, J. Zimmerman<sup>5</sup>, A. Tamboli<sup>4</sup>, E. Warren<sup>4</sup>; <sup>1</sup>New Haven, CT/US, <sup>2</sup>CO/US, <sup>3</sup>HK, <sup>4</sup>Golden, CO/US, <sup>5</sup>Golden, US

09:40 - 10:00 SINGLE-CRYSTAL-LIKE THIN FILM III-V MATERIAL DIRECTLY GROWN ON HASTELLOY TAPE FOR FLEXIBLE SOLAR CELLS

J. Ryou<sup>1</sup>, V. Selvamanickam<sup>2</sup>, S. Pouladi<sup>2</sup>, M. Asadirad<sup>2</sup>, M. Rathi<sup>2</sup>, S.K. Oh<sup>2</sup>, D. Khatiwada<sup>2</sup>, P. Dutta<sup>2</sup>, S. Shervin<sup>2</sup>, Y. Yao<sup>2</sup>, Y. Li<sup>2</sup>, J. Chen<sup>2</sup>; <sup>1</sup>Houston, TX/US, <sup>2</sup>US

08:00 - 10:00 Symposium on Epitaxy of Complex Oxides (10 of 11) Eldorado Grand Ballroom (A)  
Moderation: H.N. Lee, D. Schlom, L. Martin;





- 08:00 - 08:15 COMPOSITION CONTROL AND STEP COVERAGE FOR ALD DEPOSITED PBTIO<sub>3</sub> AND PZT THIN FILMS  
N. Sbrockey<sup>1</sup>, G. Tompa<sup>1</sup>, M. Fanton<sup>2</sup>, K. Trumbull<sup>3</sup>, R. Lavelle<sup>3</sup>, D. Snyder<sup>2</sup>, R. Polcawich<sup>3</sup>, D. Potrepka<sup>3</sup>; <sup>1</sup>Piscataway, NJ/US, <sup>2</sup>PA/US, <sup>3</sup>US
- 08:15 - 08:30 EPITAXIAL GROWTH OF CAMN<sub>7</sub>O<sub>12</sub> THIN FILMS BY BOTH OZONE-PLD AND OXIDE MBE  
A. Huon<sup>1</sup>, H.N. Lee<sup>2</sup>, S. May<sup>1</sup>; <sup>1</sup>Philadelphia, PA/US, <sup>2</sup>Oak Ridge, TN/US
- 08:30 - 08:45 SELF-TEMPLATED EPITAXIAL GROWTH OF LOW-SYMMETRY VANADIUM DIOXIDES ON PEROVSKITES  
X. Gao<sup>1</sup>, S. Lee<sup>1</sup>, M. Chisholm<sup>2</sup>, H.N. Lee<sup>1</sup>; <sup>1</sup>Oak Ridge, TN/US, <sup>2</sup>Oak Ridge, US
- 08:45 - 09:00 MBE GROWN (LU1-XFEO<sub>3</sub>)M/(LU1-YMN(1/3)FE(2/3)O<sub>3</sub>)N SUPERLATTICES  
R. Steinhardt<sup>1</sup>, J. Mundy<sup>2</sup>, M. Holtz<sup>3</sup>, C. Brooks<sup>1</sup>, D. Schlom<sup>3</sup>; <sup>1</sup>Ithaca, NY/US, <sup>2</sup>NY/US, <sup>3</sup>US
- 09:00 - 09:30 25 YEARS OF PROGRESS IN PEROVSKITE-TYPE SUBSTRATE CRYSTAL GROWTH AT THE LEIBNIZ INSTITUTE FOR CRYSTAL GROWTH  
C. Gugashev, D. Klimm, R. Uecker, M. Brützam, I. Schulze-Jonack, Z. Galazka, R. Bertram, S. Ganschow, M. Bickermann; Berlin, DE
- 09:30 - 10:00 ENGINEERING DEFECT FORMATION IN FUNCTIONAL OXIDE THIN FILMS AND HETEROSTRUCTURES  
R. Dittmann<sup>1</sup>, F. Gunkel<sup>2</sup>, F. Hensling<sup>1</sup>, C. Xu<sup>1</sup>; <sup>1</sup>Jülich, DE, <sup>2</sup>DE
- 10:30 - 12:00 Modeling of Crystal Growth Processes (3 of 3) Eldorado Grand Ballroom (B)  
Moderation: J.J. Derby, Minneapolis, MN/US
- 10:30 - 10:45 EFFECT OF WETTING ON THE TRANSITION FROM HOMOGENEOUS TO HETEROGENEOUS NUCLEATION OF DEUTERIUM  
L. Zepeda-Ruiz, Livermore, CA/US
- 10:45 - 11:00 ANALYSIS OF SILICON CARBIDE AND SILICON NITRIDE PARTICLE ENGULFMENT DURING MULTI-CRYSTAL SILICON GROWTH FOR PHOTOVOLTAICS  
Y. Tao<sup>1</sup>, J. Peterson<sup>1</sup>, C. Reimann<sup>2</sup>, J. Friedrich<sup>2</sup>, T. Jauss<sup>3</sup>, T. Sorgenfrei<sup>4</sup>, A. Croell<sup>5</sup>, J. Derby<sup>1</sup>; <sup>1</sup>Minneapolis, MN/US, <sup>2</sup>Erlangen, DE, <sup>3</sup>Freiburg, DE, <sup>4</sup>DE, <sup>5</sup>Huntsville, AL/US



10:30 - 11:30 Nanocrystals, Quantum Dots, and Nanowires (2 of 2) Zia Ballroom  
Moderation: K. Bertness<sup>1</sup>, D. Feezell<sup>2</sup>; <sup>1</sup>Boulder, CO/US, <sup>2</sup>

10:30 - 10:50 ELECTRON-BEAM-INDUCED CURRENT IN GAAS/FE CORE-SHELL NANOWIRES  
M. Yang, S. Watkins, K. Kavanagh; Burnaby, BC/CA

10:50 - 11:10 MOVPE OF INAS QDS ON INP EMITTING AROUND THE TELECOM C-BAND  
A. Krysa<sup>1</sup>, J. Skiba-Szymanska<sup>2</sup>, J. Huwer<sup>2</sup>, T. Müller<sup>2</sup>, M. Felle<sup>2</sup>, B. Harrison<sup>1</sup>, R.M. Stevenson<sup>2</sup>, J. Heffernan<sup>1</sup>, A. Shields<sup>2</sup>; <sup>1</sup>Sheffield, GB, <sup>2</sup>Cambridge, GB

11:10 - 11:30 **LARGE AREA UNIFORM VLSI NANOWIRE GROWTH TOOL**  
S. Okur<sup>1</sup>, T. Salagaj<sup>2</sup>, N. Sbrockey<sup>1</sup>, G. Tompa<sup>2</sup>, J. Vanjaria<sup>3</sup>, E. Azhar<sup>3</sup>, H. Yu<sup>3</sup>;  
<sup>1</sup>Piscataway, US, <sup>2</sup>Piscataway, NJ/US, <sup>3</sup>US

10:30 - 12:00 Symposium on Epitaxy of Complex Oxides (11 of 11) Eldorado Grand Ballroom (A)  
Moderation: H.N. Lee, D. Schlom, L. Martin;

10:30 - 11:00 CHEMICAL SOLUTION SYNTHESIS OF EPITAXIAL THIN-FILM OXIDES  
J.M. Vila-Funqueiriño<sup>1</sup>, B. Rivas-Murias<sup>2</sup>, A. Gómez<sup>3</sup>, J. Gazquez<sup>3</sup>, M. Gich<sup>3</sup>, A. Carretero-Genevriér<sup>1</sup>, F. Rivadulla<sup>2</sup>; <sup>1</sup>Montpellier, FR, <sup>2</sup>Santiago De Compostela, ES, <sup>3</sup>Bellaterra, ES

11:00 - 11:30 *IN SITU* OBSERVATION OF LAYER-BY-LAYER MEAN INNER POTENTIAL OSCILLATIONS AND PRECISE GROWTH CONTROL OF OXIDE INTERFACES  
Y. Nie, Nanjing, CN

11:30 - 12:00 ATOMICALLY ENGINEERED FERROIC LAYERS YIELD A ROOM-TEMPERATURE MAGNETOELECTRIC MULTIFERROIC  
J. Mundy, Berkeley, CA/US