

ICTMC-19

19th International Conference on Ternary and Multinary

Compounds

September 1-5, 2014, Niigata, JAPAN

Conference Program



2 September (Tuesday)

9:00-9:15 Opening

9:15-10:30

Room 301, A

[Tue-I-1A] Fundamentals and R&D Status of III-V Compound Solar Cells and Materials

M. Yamaguchi, *Toyota Technological Institute*

[Tue-I-2A] Hydrogen-bearing iron-based superconductors

H. Hosono, S. Iimura, and S. Matsusishi, *Tokyo Institute of Tech.*

10:30-10:50 *Break*

10:50-12:20

Room 301, A

[Tue-I-3A] Using soft x-rays and electrons to determine the electronic structure of multinary semiconductors for solar energy conversion

C. Heske, *Karlsruhe Institute of Tech. (KIT) / Univ. of Nevada, Las Vegas (UNLV)*

[Tue-I-4A] Nanoparticle Ink Based Route for Thin Film Solar Cells of Quaternary Chalcogenides

R. Agrawal, *Purdue Univ.*

[Tue-I-5A] Nanostructured electronic and optical materials for high efficiency solar cells

N. Ekins-Daukes, *Imperial College, UK*

12:20-14:00 *Break for Lunch*

14:00-14:45

Room 301, A

[Tue-O-1A] Fabrication of $\text{Cu}_2\text{ZnSnS}_4$ Thin Films using Electrodeposited Metallic Precursors

S. Ikeda, F. Jiang, W. Septina, T. Harada, and M. Matsumura, *Osaka Univ.*

[Tue-O-2A] Improvement of $\text{In}_2\text{S}_3/\text{ZnCuInS}_2$ interfaces for wide-gap solar cells

T. Yamamoto¹, T. Negami¹, K. Matsubara² and S. Niki², ¹*Panasonic Co., Ltd.* and ²*AIST*

[Tue-O-3A] Annealing temperature dependence of photovoltaic properties of solar cells containing Cu_2SnS_3 thin films produced by co-evaporation

A. Kanai¹, H. Araki^{1,2}, A. Takeuchi¹, and H. Katagiri¹, ¹*Nagaoka National College of Tech.* and ²*JST*

Room 302, B

[Tue-I-6B] High Efficiency PV Opportunities for Quantum Wells on InP

R. J. Walters, L. Hirst, C. Bailey, M. Yakes, and M. Lumb, *U.S. Naval Research Laboratory*

[Tue-O-3B] In-situ Observation of Radiation Degradation of GaAs Solar Cells with InGaAs Quantum Dot layers

T. Ohshima¹, T. Nakamura², T. Sugaya³, T. Sumita², M. Imaizumi², S.-i. Sato¹, K. Matsubara³, S. Niki³, T. Mochizuki⁴, A. Takeda⁴ and Y. Okano⁴, ¹*JAEA*, ²*JAXA*, ³*AIST* and ⁴*Tokyo City Univ.*

14:45-15:00 *Break*

15:00-16:30

Room 301, A

Symposium I "Any new photovoltaic materials superior to CIGS?"

[Tue-S-1A] A unique material? - Historic achievements of CIGS research

R. Scheer, *Martin-Luther-Univ.*

[Tue-S-2A] Recent progress and future aspects of CZTS solar cells

H. Katagiri, *Nagaoka National College of Tech.*

[Tue-S-3A] Development of chalcogenide compound semiconductors for solar cell applications

T. Minemoto, *Ritsumeikan Univ.*

Room 302, B

[Tue-I-7B] Improvement on High efficiency Multi-junction Solar Cells

T. Takemoto, T. Agui, H. Juso and H. Washio, *Sharp Corporation*

[Tue-O-4B] Temperature Dependent Spectroscopic Ellipsometry of Ag₂Se and Ag₂S with Phase Transition from Ionic to Superionic Conductivity

O. Alexperov¹, O. Samedov¹, R. Paucar^{1,2}, N. Abdulzade¹, A. Nadjafov¹, K. Wakita², N. Mamedov¹, ¹*Azerbaijan National Academy of Sciences* and ²*Chiba Institute of Tech.*

[Tue-O-5B] Electronic Structure of YbNiX₃ (X=Si, Ge) Studied by Hard X-Ray Photoemission Spectroscopy

H. Sato¹, Y. Utsumi², J. Kodama¹, H. Nagata¹, M. A. Avila³, R. A. Ribeiro³, K. Umeo¹, T. Takabatake¹, K. Mimura⁴, S. Motonami⁴, H. Anzai⁴, S. Ueda⁵, K. Shimada¹, H. Namatame¹, and M. Taniguchi¹, ¹*Hiroshima Univ.*, ²*Max Planck Institute*, ³*Univ. Federal do ABC*, ⁴*Osaka Prefecture Univ.* and ⁵*National Institute for Materials Science*

[Tue-O-6B] Local Structure Analysis of Fuel Cell Electrolyte Material YSZ by X-ray Fluorescence Holography

N. Happo¹, K. Hayashi², and S. Hosokawa³, ¹*Hiroshima City Univ.*, ²*Tohoku Univ.*, and ³*Kumamoto Univ.*

[Tue-O-7B] Structural studies on TlInSe₂ thermoelectric material by x-ray diffraction, XAFS, and x-ray fluorescence holography

S. Hosokawa¹, K. Kamimura¹, N. Happo², K. Mimura³, K. Hayashi⁴, K. Takahashi⁴, K. Wakita⁵ and N. Mamedov⁶, ¹*Kumamoto Univ.*, ²*Hiroshima City Univ.*, ³*Osaka Prefecture Univ.*, ⁴*Tohoku Univ.*, ⁵*Chiba Institute of Tech.*, and ⁶*Azerbaijan National Academy of Sciences*

16:30-16:45 *Break*

16:45-18:15

Room 301, A

Symposium I "Any new photovoltaic materials superior to CIGS?"

[Tue-S-4A] Recent progress of perovskite solar cells

A. Wakamiya, *Kyoto Univ.*

[Tue-S-5A] Characterization of materials for solar cells by direct and inverse photoemission spectroscopy

N. Terada, *Kagoshima Univ.*

[Tue-S-6A] Electrical and optical characterization of compound semiconductors for solar cells

T. Sakurai, *Tsukuba Univ.*

Discussion

Room 302, B

[Tue-O-8B] Fabrication of transparent Cu_xZn_yS/ZnS heterojunction diodes by photochemical deposition

Y. Maeda and M. Ichimura, *Nagoya Institute of Tech.*

[Tue-O-9B] Deposition of Cl-doped CdTe Polycrystalline Films by Close-Spaced Sublimation

T. Okamoto¹, K. Takahashi¹, S. Akiba¹, S. Tokuda², H. Kishihara² and T. Sato², ¹*Kisarazu National College of Tech.* and ²*Shimadzu Corporation*

[Tue-O-10B] The Growth of AgGaTe₂ layers on glass substrates with Ag₂Te buffer layer by closed space sublimation. Method

A. Uruno, A. Usui, Y. Takeda, T. Inoue, and M. Kobayashi, *Waseda Univ.*

[Tue-O-11B] Chemical synthesis and crystal growth of AgGaGeS₄, a material for mid-IR nonlinear laser applications

J. Rame¹, J. Petit Petit¹ and B. Viana², ¹ONERA and ²IRCP Chimie ParisTech

[Tue-O-12B] Electrical Properties of Cu₂O Thin Films Prepared by Electrochemical Process

A. Ashida, S. Sato, T. Yoshimura and N. Fujimura, *Osaka Prefecture Univ.*

[Tue-O-13B] Epitaxial Growth of a Chromium Nitride Thin Films with Addition of Silicon

T. Suzuki, T. Endo, K. Suzuki, T. Nakayama and H. Suematsu, *Nagaoka Univ. of Tech.*

18:15-18:30 *Break*

18:30-20:00

Poster session 1

(Odd number of poster number)

3 September (Wednesday)

9:00-10:30

Room 301, A

[Wed-I-1A] High efficiency and large volume production of CIS-based modules

K. Kushiya, *Solar Frontier K.K.*

[Wed-O-1A] From band structure to band alignment- a study on chalcopyrite surfaces

C. Pettenkofer, *Helmholtz Zentrum Berlin*

[Wed-O-2A] Structural characterisation of $\text{Cu}_2\text{ZnSn}(\text{S}_{1-x}\text{Se}_x)_4$

M. Guc¹, S. Levchenko², C. Merschjann^{2,3}, G. Gurieva², S. Schorr^{2,4}, M. Lux-Steiner² and E. Arushanov, ¹*Academy of Sciences of Moldova*, ²*Helmholtz Zentrum Berlin*, ³*Univ. of Rostock*, and ⁴*Free Univ. Berlin*

[Wed-O-3A] Improvement of $\text{Cu}_2\text{ZnSn}(\text{S,Se})_4$ solar cell efficiency by surface treatment

K. Furuta¹, N. Sakai², T. Kato², H. Sugimoto², Y. Kurokawa¹ and A. Yamada¹, ¹*Tokyo Tech.* and ²*Showa Shell Sekiyu K.K.*

10:30-10:50 *Break*

10:50-12:20

Room 301, A

[Wed-I-2A] Nanostructuring of Semiconductor Compounds by Design

I. M. Tiginyanu, *Academy of Sciences of Moldova and Technical Univ. of Moldova*

[Wed-I-3A] Toward the electric-field control of magnetization in matter

T. Arima, *Univ. of Tokyo*

[Wed-I-4A] Phase change characteristics of Cu-Ge-Te ternary film and its application to PCRAM

Y. Sutou, *Tohoku Univ.*

12:20-14:00 *Break for Lunch*

14:00-14:45

Room 301, A

[Wed-O-4A] Bismuth-Doped $\text{Cu}(\text{In,Ga})\text{Se}_2$ Absorber Prepared by Multi-layer Precursor Method and Its Solar Cell

J. Chantana¹, D. Hironiwa¹, T. Watanabe², S. Teraji², K. Kawamura² and T. Minemoto¹, ¹*Ritsumeikan Univ.* and ²*Nitto Denko Corporation*

[Wed-O-5A] Photoluminescence and Photoacoustic Study of $\text{Cu}(\text{In,Ga})\text{S}_2$ Crystals

M. Yamazaki, K. Oishi, S. Fukai, S. Hiroi, K. Nakamura, and H. Katagiri, *Nagaoka National College of Tech.*

[Wed-O-6A] High performance IGZO thin film transistors with optimized IGZO composition structure using oxygen modulation

H.-C. Wu and Chao-Hsin Chien, *National Chiao-Tung Univ.*

Room 302,B

[Wed-O-4B] Ce³⁺-activated Novel Oxide Phosphors

S.W. Kim¹, T. Hasegawa¹, K. Uematsu¹, K. Toda¹, H. Takaba², T. Ishigaki¹, and M. Sato¹, *Niigata Univ. and Kogakuin Univ.*

[Wed-O-5B] Luminescent Property and Mechanism of ZnAl₂O₄ Ultra Violet Emitting Phosphor

T. Ishinaga¹, T. Iguchi¹, H. Kominami¹, K. Hara¹, M. Kitaura² and A. Ohnishi², ¹*Shizuoka Univ.* and ²*Yamagata Univ.*

[Wed-O-6B] Optical Properties and Core State of AlN - BN Ternary Compound by ab initio Calculations

M. Yamashita¹, N. Hamada², H. Funashima³ and M. Yoshiya^{4,5}, ¹*Sumitomo Electric Industries, Ltd.*, ²*Tokyo Univ. of Science*, ³*Osaka Univ.* and ⁴*Japan Fine Ceramics Center*

14:45-15:00 Break

15:00-16:30

Room 301, A

Symposium II "Advanced characterization of solar cells"

[Wed-S-1A] Introductory Talk

S. Shirakata, *Ehime Univ.*

[Wed-S-2A] Photocarrier dynamics in CIGS, CZTS and related materials revealed by ultrafast optical spectroscopy

M. Okano, *Kyoto Univ.*

[Wed-S-3A] Photo-assisted scanning probe microscopy on CIGS solar cells

T. Takahashi, *Univ. of Tokyo*

[Wed-S-4A] Radiation-induced defects in CIGS films

S. Kawakita, *JAXA*

Room 302, B

[Wed-O-7B] Compositional inhomogeneities in tetrahedrally bonded solar absorbers: Cu₂SnS₃ and Cu₂SnZnS₄

P. Zawadzki and S. Lany, *National Renewable Laboratory*

[Wed-O-8B] First-principles Calculation of Cu_2SnS_3 and Related Compounds

A. Sigemi, T. Maeda, and T. Wada, *Ryukoku Univ.*

[Wed-O-9B] Effect of Conduction Band Offset between Transparent Electrode and Absorber in Thin Film Solar Cells

M. Murata, N. Ashida, D. Hironiwa, J. Chantana and T. Minemoto, *Ritsumeikan Univ.*

[Wed-O-10B] Preparation of ZnSnP_2 polycrystal by flux method

S. Nakatsuka, R. Katsube, Y. Nose and Y. Shirai, *Kyoto Univ.*

[Wed-O-11B] Growing optimization and characterization of $\text{Cu}_x\text{Al}_y\text{S}_z$ thin films deposited by atomic layer deposition

L. Duclaux, J. Vidal, F. Donsanti, N. Schneider and N. Naghavi, *IRDEP*

[Wed-O-12B] Temperature dependence of the low-frequencies Raman scattering in TlInS_2

R. Paucar¹, K. Wakita¹, Y.G Shim², O. Alekperov³, and N. Mamedov³, ¹*Chiba Institute of Tech.*, ²*Osaka Prefecture Univ.*, and ³*Azerbaijan National Academy of Sciences*

16:30-16:45 *Break*

16:45-16:45

Room 301, A

Symposium II "Advanced characterization of solar cells"

[Wed-S-5A] First Principles insights on characteristics of CuInSe_2 and $\text{Cu}_2\text{ZnSnS}_4$ based photovoltaic semiconductors

T. Maeda, *Ryukoku Univ.*

[Wed-S-6A] Photoluminescence characterization of recombination process in CIGS thin films and solar cells

S. Shirakata, *Ehime Univ.*

[Wed-S-7A] Concluding Remarks

A. Yamada, *Tokyo Institute of Tech.*

Room 302, B

[Wed-O-13B] Detection of magnetic domains of multiferroic BiFeO_3 single crystals with single ferroelectric domain by use of anisotropic

T. Ito¹, T. Ushiyama¹, Y. Ozaki¹, Y. Tomioka¹ and M. Tokunaga², ¹*AIST* and ²*Univ. of Tokyo*

[Wed-O-14B] Pyroelectric Energy Harvesting Using BaTiO_3 Compounds

K. Hayashi¹, E. Aikawa¹, T. Ueno², T. Kajitani¹ and Y. Miyazaki¹, ¹*Tohoku Univ.* and ²*Tohoku Ceramic*

[Wed-O-15B] **Metallic conductivity and weak antilocalization in $\text{Bi}_2\text{Te}_{2.7}\text{Se}_{0.3}$ thin films**

A. M. Kerimova¹, N.A. Abdullayev¹, Kh.V. Aliquliyeva¹, Y. Shim², K. Mimura², K. Wakita³, O.Z. Alekperov¹, N.T. Mamedov¹, V.N. Zverev⁴, ¹*Azerbaijan National Academy of Sciences*, ²*Osaka Prefecture Univ.*, ³*Chiba Institute of Tech.* and ⁴*Institute of Solid State Physics, Russia*

[Wed-O-16B] **Structure, and Magnetic Properties of Monodisperse Ni-doped CeO_2 Nanospheres**

S. Maensiri^{1,2}, S. Phokha² and S. Pinitsoontorn², ¹*Khon Kaen Univ.* and ²*Suranaree Univ. of Tech.*

[Wed-O-17B] **First-principles study of doping properties in ZnSnAs_2**

M. Ishikawa and T. Nakayama, *Chiba Univ.*

[Wed-O-18B] **Pressure-induced Unconventional Behavior of Ferromagnetically MnP Clusters in Strongly Inhomogeneous Mn-doped CdGeP_2**

T. R. Arslanov¹, L. Kilanski², A. Yu. Mollaev¹, I. K. Kamilov¹, R. K. Arslanov¹, U. Z. Zalibekov¹, R. Minikae², A. Reszka², S. López-Moreno³, A. H. Romero⁴, M. Ramzan⁵, P. Panigrahi^{5,6}, R. Ahuja^{5,6}, T. Chatterji⁷, V. M. Trukhan⁸, S. F. Marenkin⁹, and T. V. Shoukavaya⁸, ¹*Amirkhanov Institute of Physics*, ²*Polish Academy of Sciences*, ³*Univ. Autónoma del Estado de Hidalgo*, ⁴*West Virginia Univ.*, ⁵*Uppsala Univ.*, ⁶*Royal Institute of Tech., Sweden*, ⁷*Institute Laue-Langevin*, *SSPA of NAS of Belarus*, and ⁹*Kurnakov Institute of General and Inorganic Chemistry RAS* (withdraw)

18:15-18:30 *Break*

18:30-20:00

Poster session 2

(Even number of poster number)

4 September (Thursday)

9:00-10:30

Room 301, A

[Thu-I-1A] First-principles design of multinary compounds for energy applications

S.-H. Wei, *National Renewable Energy Laboratory*

[Thu-I-2A] Point defect characteristics of quaternary compound semiconductors

S. Schorr^{1,2}, G. Gurieva¹, ¹*Helmholtz Zentrum Berlin and* ²*Free Univ. Berlin*

[Thu-I-3A] Insights into thin film chalcopyrite/kesterite growth and solar cells from real time XRD

S. Hartnauer, S. Zahedi-Azad, L. Wägele, E. Jarzembowski, P. Pistor, R. Scheer, *Martin-Luther-Univ.*

10:30-10:50 Break

10:50-12:20

Room 301, A

[Thu-O-1A] First-principles study on alkali-metal effect of Li, Na, and K in $\text{Cu}_2\text{ZnSnS}_4$ and $\text{Cu}_2\text{ZnSnSe}_4$

T. Maeda, A. Kawabata, and T. Wada, *Ryukoku Univ.*

[Thu-O-2A] Fabrication of $\text{Cu}(\text{In,Ga})\text{Se}_2$ solar cells with a single graded band profile

T. Nishimura, S. Kasashima, Y. Hirai, Y. Kurokawa, and A. Yamada, *Tokyo Institute of Tech.*

[Thu-O-3A] Surface electronic structure of CIGS films grown on polymer substrate

T. Fukuyama¹, K. Chochi¹, S. Yoshimoto¹, M. Mitsunaga¹, H. Shibata², K. Matsubara², S. Niki², and N. Terada^{1,2}, ¹*Kagoshima Univ. and* ²*AIST*

[Thu-O-4A] Fabrication of a $\text{Cu}_2\text{ZnSnSe}_4$ thin film solar cell with 7.3 % efficiency from a sputtered metallic precursor without using a toxic H_2Se gas atmosphere

S. J. Yeo¹, S. W. Shin², C. W. Hong¹, E. A. Jo¹, H. S. Yang¹, J. H. Yun³, J. Gwak³, H. R. Choi³, and J. Y. Lee², and J. Y. Kim¹, ¹*Chonnam Nat. Univ.*, ²*KAIST*, and ³*KIER*

[Thu-O-5A] Crystallographic and optical properties of $(\text{Cu, Ag})_2\text{ZnSnS}_4$ and $(\text{Cu, Ag})_2\text{ZnSnSe}_4$ solid solutions

W. Gong, T. Tabata, K. Takeji, M. Morihama, T. Maeda, and T. Wada, *Ryukoku Univ.*

[Thu-O-6A] Characterization of narrow bandgap CIGSe under light concentration and tandem conditions

Z. Jehl Li Kao, I. Matsuyama, and T. Nakada, *Tokyo Univ. of Science*

12:20-14:00 Break for Lunch

14:00-15:30

Room 301, A

Symposium III "Multinary materials in the next generation"

Introductory talk

N. Uchitomi, *Nagaoka Univ. of Tech.*

[Thu-S-1A] **Advanced spintronic materials based on ordered alloys**

K. Takanashi, *Tohoku Univ.*

[Thu-S-2A] **The new superconductor recently discovered by our group**

J. Akimitsu, *Aoyama Gakuin Univ.*

[Thu-S-3A] **Spin Current and Spin Seebeck Effect**

S. Maekawa, *Advanced Science Reserch Center*

Closing talk

K. Sato, *JST*

Room 302, B

[Thu-O-7B] **Growth of amorphous Zn-Sn-O buffer layers deposited via RF magnetron sputtering for CIGS solar cells**

S.-W. Chang and M. Sugiyama, *Tokyo Univ. of Science*

[Thu-O-8B] **Optimization of Sulfurization Condition of CZTS Thin Films by TG/DTA**

T. Washio^{1,2}, K. Jimbo¹ and H. Katagiri^{1,2}, ¹*Nagaoka National College of Tech. and*
²*JST-CREST*

[Thu-O-9B] **CuInS₂ films by reactive-sputtering method with Cu and In targets for metal-sources and H₂S or CS₂ for reactive-gas**

N. Tsuboi, T. Ono, and T. Nomoto, *Niigata Univ.*

[Thu-O-10B] **Cu₂SnS₃ films prepared by reactive-sputtering alternately Cu and Sn targets under Ar-diluted CS₂ atmosphere**

R. Mantoku, T. Ono, T. Nomoto, and N. Tsuboi, *Niigata Univ.*

[Thu-O-11B] **Effect of sintering time on uniformity of electrodeposited Cu₂ZnSnS₄ thin films studied by a carrier lifetime and a photoluminescence measurements**

T. Hamada¹, A. Fukuyama¹, F. Jiang², S. Ikeda², and T. Ikari¹, ¹*Univ. of Miyazaki and* ²*Osaka Univ.*

[Thu-O-12B] **Fabrication of visible-light transparent solar cells composed of NiO/Ni_xZn_{1-x}O/ZnO heterostructures**

D. Kawade¹, K. Moriyama¹, F. Nakamura¹, S. F. Chichibu², and M. Sugiyama¹, ¹*Tokyo Univ. of Science and* ²*Tohoku Univ.*

15:45-17:45 *Excursion*

18:30-20:00 *Banquet*

5 September (Friday)

9:00-10:30

Room 301, A

[Fri-I-1A] Selective atomic-scale-evaluation of luminescent rare-earth dopants: Site-selective x-ray absorption fine structure using x-ray excited optical luminescence (XEOL-XAFS)

M. Ishii, *NIMS*

[Fri-I-2A] Persistent luminescence: materials and applications

D. Poelman, K. Van den Eeckhout, J. Botterman, and P.F. Smet, *Ghent Univ.*

[Fri-I-3A] TIMeX₂: Band Structure, Optical Properties and Application

N. Mamedov, *Institute of Physics, Azerbaijan*

10:30-10:50 Break

10:50-12:50

Room 301, A

[Fri-O-1A] Red emitting conductive CuAlS₂:Mn, Si thin films

H. Kawaguchi, T. Ishigaki, T. Adachi, Y. Oshima, and K. Ohmi, *Tottori Univ.*

[Fri-O-2A] Relation between the nodal and antinodal gap and critical temperature in high-T_c superconductor Bi₂Sr₂CaCu₂O_{8+δ}

H. Anzai¹, A. Ino², M. Arita², H. Namatame², M. Taniguchi², M. Ishikado³, K. Fujita⁴, S. Ishida⁵, and S. Uchida⁶, ¹*Osaka Prefecture Univ.*, ²*Hiroshima Univ.*, ³*CROSS*, ⁴*Cornell Univ.*, ⁵*AIST*, and ⁶*Univ. of Tokyo*

[Fri-O-3A] Thermally induced spin injection in Co₂FeSi/Cu lateral spin-valve devices

K. Yamasaki¹, S. Oki¹, S. Yamada¹ and K. Hamaya^{2,3}, ¹*Kyushu Univ.*, ²*Osaka Univ.*, and ³*CREST*

[Fri-O-4A] Hard X-Ray Photoemission Study of EuNi₂X₂ (X = Si, P, Ge): Relation between Eu Mean Valence and Eu 3d Spectral Shape

K. Mimura^{1,2}, K. Ichiki¹, H. Anzai¹, T. Uozumi¹, E. Matsuyama¹, H. Sato², Y. Utsumi³, S. Ueda⁴, A. Mitsuda⁵, H. Wada⁵, Y. Taguchi¹, K. Shimada², H. Namatame² and M. Taniguchi^{2,3}, ¹*Osaka Prefecture Univ.*, ²*Hiroshima Univ.*, ³*Max Plank Institute*, ⁴*NIMS*, ⁵*Kyushu Univ. and Hiroshima Univ.*

[Fri-I-4A] RF-MBE Growth of InN and InGaN Ternary Alloys Using DERI

T. Araki¹, T. Yamaguchi², and Y. Nanishi¹, ¹*Ritsumeikan Univ.* and ²*Kogakuin Univ.*

[Fri-I-5A] Redox properties and reactivity of Au/ceria and VOx/ceria interfaces: Insights, pitfalls, and caveats born out of DFT

J. Paier, T. Kropp, C. Penschke, and J. Sauer, *Humboldt-Universität zu Berlin*

12:50-13:00 Closing

Poster presentations

[P1-001] Influence of the Composition of $(\text{TlInSe}_2)_{1-x}(\text{TlGaTe}_2)_x$ Alloys on Their Dielectric Properties

S. N. Mustafaeva, *National Academy of Sciences of Azerbaijan* (withdraw)

[P1-002] Frequency-Dependent Dielectric Losses in Diluted $\text{TlIn}_{1-x}\text{Er}_x\text{Se}_2$ Solid Solutions

S. N. Mustafaeva, M.M. Asadov, E.M. Kerimova, S.B. Kazimov, *National Academy of Sciences of Azerbaijan*

[P1-003] $\text{TlIn}_{1-x}\text{Er}_x\text{S}_2$ ($x = 0-0.01$) Solid Solutions and their Optical Properties

N. Z. Gasanov, E.M. Kerimova, F.M. Seyidov, Yu.G. Asadov and K. M. Huseynova, *Azerbaijan National Academy of Sciences*

[P1-004] Thin Films Growth of $\text{Cd}_{1-x}\text{Zn}_x\text{Te}$ for X-ray Imaging Sensor

J. Takahasi, K. Mochizuki, and N. Nakamura, *Ishinomaki Senshu-Univ.*

[P1-005] Growth of PbSnI_4 and Its Application for Flat Panel X-ray Image Sensor

K. Mochizuki and N. Nakamura, *Ishinomaki Senshu-Univ.*

[P1-006] Low absorption ZnGeP_2 single crystals for tunable mid IR laser applications

J. Petit, J. Rame, A. Godard, J.-M. Melkonian, Q. Clement, M. Raybaut, J.-B. Dherbecourt, *ONERA, France*

[P1-007] In-situ RHEED observation of $\text{CuGaSe}_2/\text{CuInSe}_2$ super lattice grown on GaAs (001)

T. Sathibama¹, A. Kawaharazuka², T. Makimoto¹ and Y. Horikoshi^{1,2}, ¹*Waseda Univ. and* ²*CREST*

[P1-008] Band Gap and Optical Transmission in the Fibonacci Type One- Dimensional $\text{A}_5\text{B}_6\text{C}_7$ Based Photonic Crystals

S. Simsek¹, H. Koc², S. Palaz³, O. Oltulu³, A. M. Mamedov^{4,5} and E. Ozbay⁴, ¹*Hakkari Univ.*, ²*Siirt Univ.*, ³*Harran Univ.*, ⁴*Bilkent Univ.*, and ⁵*Baku State Univ.*

[P1-009] Manufacture of electrode using nanorod-constructed ZnO for dye-sensitized solar cell

R. Koizumi, T. Ozawa, and M. Dohi, *Shizuoka Institute of Science and Tech.*

[P1-010] Preparation and properties of nanodimensional diffraction lattice on the base of SmS

Y. N. Aliyeva, A. M. Kerimova, O. Z. Alekperov, I. S. Hasanov, E. K. Huseynov, T. R. Mehdiyev, N. T. Mamedov, *Azerbaijan National Academy of Science*

[P1-011] Growth and Characteristics of Amorphous Silica-Modified Polyaniline Films for Ammonia Sensor Application

M. K. G. Odarve and R.M. Vequizo, *Mindanao State Univ.-Iligan Institute of Tech.*

[P1-012] Synthesis and characterization of nanocrystalline hydroxyapatite and biphasic calcium phosphate using $\text{Ca}(\text{OH})_2$ and $(\text{NH}_4)_2\text{H}_2\text{PO}_4$

R. B. Unabia, J. C. Piagola, J. R. P. Guerrero, R. M. Vequizo, J. E. Gambe, M. K. G. Odarve, and B. R. B. Sambo, *Mindanao State Univ.-Iligan Institute of Tech.*

[P1-013] Effect of supercritical carbon dioxide treatment on the polarons of HCl-doped polyaniline films

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[P1-014] A mild hydrothermal route to synthesis of CZTS nanoparticles ink for solar cell applications

S. A. Vhanalkar, P. S. Patil¹, J. H. Kim, *Chonnam National Univ.*

[P1-015] Growth and Characterization of III-group element doped ZnSnAs_2 Thin Films on InP substrates

T. Kato, T. Uchiyama, H. Toyota, and N. Uchitomi, *Nagaoka Univ. of Tech.*

[P1-016] Low-temperature heteroepitaxial growth of InAlAs layers on $\text{ZnSnAs}_2/\text{InP}(001)$

H. Oomae¹, A. Suzuki¹, H. Toyota¹, S. Nakamura², and N. Uchitomi¹, ¹*Nagaoka Univ. of Tech.* and ²*Aoyama Gakuin Univ.*

[P1-017] Electrical properties of Zn_3P_2 bulk crystals grown from In-P-Zn solution

R. Katsube¹, Y. Nose¹, A. Nagaoka¹, K. Yoshino², and Y. Shirai¹, ¹*Kyoto Univ.* and ²*Univ. of Miyazaki*

[P1-018] Properties of in situ HCl-doped emeraldine polyaniline on n-Si(100) substrate for rectifying diode application

J. P. B. Ontolan Jr., P. A. M. Alcantara, R. M. Vequizo, M. K. G. Odarve, and B. R. B. Sambo, *Mindanao State Univ.-Iligan Institute of Tech.*

[P1-019] Crystallization mechanism of sol-gel synthesized spinel LiMn_2O_4

K. Kushida¹ and K. Kuriyama², ¹*Osaka Kyoiku Univ.* and ²*Hosei Univ.*

[P1-020] Semiconducting asphaltene thin films: preparation and characterization.

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[P1-021] Optimization of preparation technology of ZnO and ZnO:Al thin films for solar cell applications

E. Bagiyev, R. Valiyev, Y. Aliyeva, A. Kerimova, Z. Mamiyev, and A. H. Bayramov, *Azerbaijan National Academy of Sciences*

[P1-022] Morphological and structural modifications of chemically-prepared emeraldine polyaniline and zinc oxide in PAni/ZnO heterostructure

R. M. Vequizo, F.R. G. Bagsican, and M.K.G. Odarve, *Mindanao State Univ.-Iligan Institute of Tech.*

[P1-023] Macro and Micro Scale Aspects of Phase Transitions in Shape Memory Alloys

O. Adiguzel, *Firat Univ.* (withdraw)

[P1-024] Effect of arsenic cracking on In incorporation into selectively-grown InGaAs layer by MBE

H. Iha, Y. Hirota, S. Yamauchi, N. Yamamoto, T. Maruyama, and S. Naritsuka, *Meijo Univ.*

[P1-025] YbAs₄Se₇ thin films epitaxially growth

E. Hajiyev, *Azerbaijan National Academy of Sciences*

[P1-026] Parameters that Influence the Growth of ZnO Nanostructures Grown via Chemical Bath Deposition Technique

S. L. Manulat¹, A. C. Alguno² and R.M. Vequizo², ¹*Mindanao State Univ. and Mindanao State Univ.-Iligan Institute of Tech.* (withdraw)

[P1-027] Effect of Annealing Temperature on Crucial Optical Properties of Fluoride doped Tin Oxide thin films grown by sol-gel route

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[P1-028] Effects of Zn-dopant on structural properties and electrochromic performance of sol-gel derived NiO thin films

R. Noonuruk¹, W. Mekprasart¹, and W. Pecharapa^{1,2}, ¹*King Mongkut's Institute of Tech. Ladkrabang* and ²*Thailand and Center of Excellence in Physics*

[P1-029] Optical property of multi-stacked CdSe/ZnSe quantum dot layers fabricated by using alternate beam supplying method

Y. Kawasaki¹, M. Yoneta¹, M. Honda², and T. Taniyama³, ¹*Okayama Univ. of Science*, ²*Naruto Univ. of Education*, and ³*Tokyo Institute of Tech.*

[P1-030] Synthesis of Porous CuInS₂ Crystals

Y. Akaki, T. Matsubara, T. Kaneko, S. Kitano and M. Nagasaki, *Miyakonojo National College of Tech.*

[P1-031] Synthesis and exfoliation studies of layered Tin Disulfide nanoparticles prepared by a Low-Cost Process

A. Mendez-Lopez¹, A. Morales -Acevedo¹, Y.J. Acosta-Silva¹, H. Katagiri³, Y. Matsumoto-Kuwabara¹, O. Zelaya . Zelaya-Angel¹, J. Santoyo-Salazar¹, J.I. Contreras-Rascon², M. Ortega-López¹, ¹*Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional,* ²*Benemérita Universidad Autónoma Puebla,* and ³*Nagaoka National College of Tech.*

[P1-032] Self-organization processes in ternary semiconducting solid solutions

E. Rogacheva, *National Technical Univ., Ukraine* (withdraw)

[P1-120] Hydrothermal synthesis and characterization of Cu₂SnS₃ nanoparticles for solar cell applications

S. A. Vanalakar, M. G. Kang, J. H. Kim, and J. Y. Kim, *Chonnam Nat. Univ.*

[P1-123] One-pot hydrothermal synthesis, characterization, and electrochemical properties of rGO/CoFe₂O₄ nanocomposite

I. Kotutha¹, E. Sawatsitang², W. Meewassana^{1,3}, and S. Maensiri^{1,3}, ¹*Institute of Science Suranaree Univ. of Tech.,* ²*Khon Kaen Univ.,* and ³*Suranaree Univ. of Tech.*

[P1-128] Synthesis of Nickel Nanowires using Poly(vinyl pyrrolidone-co-acrylic acid) Copolymers as Protecting Agents

S.-S. Hou, T.-H. Wu, and C.-Y. Chen, *National Cheng Kung Univ.*

[P2-033] Photoluminescence characterization of Cu₂ZnSiSe₄ single crystals

M. Guc¹, S. Levcenko², C. Merschjann^{2,3}, G. Gurieva², S. Schorr^{2,4}, M. Lux-Steiner², and E. Arushanov¹, ¹*Academy of Sciences of Moldova,* ²*Helmholtz-Zentrum Berlin,* ³*Univ. of Rostock,* and ⁴*Free Univ. Berlin*

[P2-034] High-Performance AlGaN/AlN/GaN High Electron Mobility Transistor with Broad Gate-to-Source Operation Voltages

J.-H. Tsai, C.-C. Chiang, and F.-M. Wang, *National Kaohsiung Normal Univ.*

[P2-035] Optical properties of as-prepared and annealed CdS:O thin films

K. Khalilova, Y.G. Shim², R. Asaba³, K. Wakita³, N. Mamedov¹, ¹*Azerbaijan National Academy of Sciences,* *Osaka Prefecture Univ.,* and *Chiba Institute of Tech.*

[P2-036] Optical constants of rare-earth-doped Y₂O₃ for up-conversion in thin film solar cells

N. Gasimov¹, E. Mammadov¹, A.L. Joudrier², S. Babayev¹, C. Andriamiadamanana², N. Naghavi², N. Mamedov¹, J.-F. Guillemoles², ¹*Azerbaijan National Academy of Sciences and* ²*Institute for Research and Development of Photovoltaic Energy, France* (withdraw)

[P2-037] EPR spectra and AFM-analysis of thin film surfaces of (Zn, Ni) ferrites

S. N. Aliyeva, E.N.Aliyeva, A.I.Nadjafov, T.R.Mehdiyev, *Azerbaijan National Academy of Sciences*

[P2-038] XAFS analysis of crystal GeCu_2Te_3 phase change material

K. Kamimura¹, K. Neldner¹, S. Zander¹, S. Schorr^{1,2}, ¹*Helmholtz Zentrum Berlin and Free Univ. Berlin*

[P2-039] Deep absorption band in $\text{Cu}(\text{In,Ga})\text{Se}_2$ thin films and solar cells observed by transparent piezoelectric photo-thermal spectroscopy

S. Shirakata¹, Akiko Atarashi¹, and Masakazu Yagi², ¹*Ehime Univ. and* ²*Kagawa National College of Tech.*

[P2-040] An x-ray fluorescence holographic study on a $\text{Bi}_2\text{Te}_3\text{:Mn}$ topological insulator

S. Hosokawa¹, K. Kamimura¹, N. Happo², K. Hayashi³, Y. Ebisu⁴, T. Ozaki⁴, Y. Yoda⁵, A. Ohnishi⁶, M. Kitaura⁶, and M. Sasaki⁶, ¹*Kumamoto Univ.*, ²*Hiroshima City Univ.*, ³*Tohoku Univ.*, ⁴*Hiroshima Institute of Tech.*, ⁵*JASRI/SPring-8*, and ⁶*Yamagata Univ.*

[P2-041] Optical Characterization of ZnO Transparent Conducting Films Prepared at Low Temperatures

S. Sano¹, T. Horii¹, Y. Oyaizu¹, T. Muranaka¹, Y. Nabetani¹, T. Matsumoto¹, S. Hiraki², S. Miyazawa², A. Fukasawa², and S. Sakamoto², ¹*Univ. of Yamanashi and* ²*Nakaya Corporation*

[P2-042] Characterization and Study Effect of Calcination Temperature on Structural Properties of Spinel Zinc Aluminate via Co-precipitation Process

W. Mekprasart, S. Worasawat, T. Tangcharoen, and W. Pecharapa, *King Mongkut's Institute of Tech. Ladkrabang*

[P2-043] Polarized Detectors of irradiation on the base of high-anisotropy compounds II-III₂VI₄

N. M. Mehdiyev, *Azerbaijan State Oil Academy* (withdraw)

[P2-044] Temperature Hierarchy of Ionic to Superionic Conductivity Transformation and Structural Phase Transitions in Ag_2S and Ag_2Se

O. Alekperov¹, O. Samedov¹, R. Paucar^{1,2}, N. Abdulzade¹, A.Nadjafov¹, K. Wakita², N. Mamedov¹, ¹*Azerbaijan National Academy of Sciences and* ²*Chiba Institute of Tech.* (withdraw)

[P2-125] Development of a gram-scale thermo-gravimetric analysis system for chlorination reaction of zirconium alloy materials

M. K. Jeon, Y.T. Choi, C. H. Lee, K.H. Kang, and G. I. Park, *Korea Atomic Energy Research Institute*

[P3-045] Band Structure and Optical Properties of the A4B6 Layered Ferroelectrics: ab initio calculations

H. Koc¹, S. Simsek², S. Palaz³, O. Oltulu³, A. M. Mamedov^{4,5}, and E. Ozbay⁴, ¹*Siirt Univ.*, ²*Hakkari Univ.*, ³*Harran Univ.*, ⁴*Bilkent Univ.*, and *Baku State Univ.*

[P3-046] Numerical analysis of Cu(In,Ga)Se₂ solar cells with high defect density layer at back side of absorber

N. Ashida, M. Murata, D. Hironiwa, H. Uegaki, J. Chantana, and T. Minemoto, *Ritsumeikan Univ.*

[P3-047] Ab-initio Calculations of Phonon Dispersion and Lattice Dynamics in TlGaTe₂

V. Jafarova¹, G. Orudzhev¹, R. Paucar^{1,2}, Y. Shim³, O. Alekperov¹, K. Wakita², N. Mamedov¹, N. Abdullayev¹, and A. Najafov¹, ¹*Institute of Physics (Innovation Sector), Azerbaijan*, ²*Chiba Institute of Tech.*, and ³*Osaka Prefecture Univ.*

[P3-048] Density Functional Theory (DFT) Study

H. Tachikawa, T. Fukuzumi, and T. Iyama, Hokkaido Univ., *Computer-Aided Molecular Design of Functional Graphene Nano-Flakes*

[P3-049] Density Functional Theory (DFT) Study on Interaction of Radicals and Atoms with Graphene Surface

T. Iyama, K. Kato, and H. Tachikawa, *Hokkaido Univ.*

[P3-050] Band Structure and Vacancy Formation in β -Ag₂S and β -Ag₂Se: Ab-Initio Study

O. Alekperov¹, Z. Jahangirli¹, R. Paucar^{1,2}, S. Huseynova¹, N. Abdulzade¹, A. Nakhmedov¹, K. Wakita², N. Mamedov¹, ¹*Azerbaijan National Academy of Sciences* and ²*Chiba Institute of Tech.*

[P3-051] Ab-initio study of ferromagnetism in Mn-doped ZnSnAs₂

V. Jafarova¹, S. Huseynova¹, S. Sadigova², G. Orudzhev^{1,2}, N. Uchitomi³, K. Wakita⁴, N. Mamedov¹, ¹*Institute of Physics (Innovation Sector), Azerbaijan*, ²*Azerbaijan Technical Univ.*, ³*Nagaoka Univ. of Tech.*, and ⁴*Chiba Institute of Tech.*

[P3-052] Development of Intelligent Design Tool for Non-stoichiometric Cu I-III-VI₂ Photovoltaic Materials and Devices

H.-L. Hwang^{1,2} and H. H. Chang¹, ¹*National Tsing Hua Univ.* and ²*Shanghai Jiaotong Univ.*

[P3-053] Determination of single-phase stability of CZTS with defects

M. N. Huda¹, P. Sarker¹, and M. M. Al-Jassim², ¹*Univ. of Texas* and ²*National Renewable Energy Laboratory (withdraw)*

[P4-054] Graphene Transparent Electrode for Thin-Film Solar Cells

R. Ishikawa¹, Y. Kurokawa², S. Miyajima², M. Konagai², ¹*Niigata Univ.* and ²*Tokyo Institute of Tech.*

[P4-055] Cu₂ZnSnS₄ Thin Film Solar Cell Prepared by Spray Pyrolysis Deposition

K. Tanaka, Y. Mikawa, M. Kato and H. Uchiki, *Nagaoka Univ. of Tech.*

[P4-056] Improvement of crystallinity of NiO thin films prepared by sol-gel spin coating

E. Konakawa, K. Tanaka and H. Uchiki, *Nagaoka Univ. of Tech.*

[P4-057] Properties of Zn defects in Cu₂ZnSnS₄ thin film

S. Miura, K. Tanaka, and H. Uchiki, *Nagaoka Univ. of Tech.*

[P4-058] Optical Properties and Electronic Band Structure of Cu₂ZnSnS₄

S. Ozaki, K. Hoshina and Y. Usami, *Gunma Univ.*

[P4-059] Effect of H₂S annealing for Cu-Sn-S thin films prepared from vacuum-evaporated Cu-Sn precursor

Y. Miyata¹, S. Nakamura², and Y. Akaki¹, ¹*Miyakonojo Coll. Tech.* and ²*Tsuyama Coll. Tech.*

[P4-060] Variable range hopping conductivity at low temperatures in CuGaS₂ single crystals.

N. A. Abdullayev, Kh.V. Aliquliyeva, I. Qasimoglu, T.G. Kerimova, *Azerbaijan National Academy of Sciences*

[P4-061] Preparation of Eco-Friendly CuInS₂ Quantum Dot-Sensitized Solar Cells

J.-Y. Chang¹, C.-C. Chang¹, and S.-H. Tzing², ¹*National Taiwan Univ. of Science and* ²*Army Academy, Taiwan*

[P4-062] Effect of UV/O₃ irradiation for C₂ZnSnS₄ thin film deposited on molybdenum by sol-gel sulfurization method

H. Miyazawa, K. Tanaka, and H. Uchiki, *Nagaoka Univ. of Tech.*

[P4-063] Impact on Water Rinse Treatment for Aged Cu₂ZnSnS₄ Studied by X-Ray Absorption Near Edge Structure Analysis

T. Toyama¹, T. Konishi¹, R. Tsuji¹, R. Maenishi², A. Atarashi², S. Yodate², and S. Shiarkata², ¹*Osaka Univ.* and ²*Ehime Univ.*

[P4-064] Cu₂SnS₃ Thin Film Solar Cells Prepared by Thermal Crystallization of Evaporated Cu/Sn Precursors in Sulfur and Tin Atmosphere

M. Nakashima¹, T. Yamaguchi¹, H. Itani¹, J. Sasano², and M. Izaki², ¹*Wakayama National College of Tech.* and ²*Toyohashi Univ. of Tech.*

[P4-065] Fabrication of Cu₂ZnSnSe₄ Thin Films by Selenization of Precursor Using Cu₂ZnSnSe₄ Compound for Photovoltaic Applications

M. Nakashima¹, T. Yamaguchi¹, K. Kusumoto¹, S. Yukawa¹, J. Sasano², and M. Izaki², ¹*Wakayama National College of Tech.* and ²*Toyohashi Univ. of Tech.*

[P4-066] Preparation and characterization of $\text{Cu}_2\text{Si}_x\text{Sn}_{1-x}\text{S}_3$

K. Toyonaga¹ and H. Araki^{1,2}, ¹Nagaoka National College of Tech. and ²Japan Science and Tech. Agency

[P4-067] Studies on $\text{In}_2\text{S}_3/\text{SnS}$ Thin Film Heterojunction Solar Cell

K.T. Ramakrishna Reddy¹, K. Ramya¹, T. Shimizu², and M. Sugiyama², ¹Sri Venkateswara Univ. and Tokyo Univ. of Sciences (withdraw)

[P4-068] Surface etching of CZTS absorber layer by Br-related solution

H. Miyazaki¹, M. Aono¹, H. Kishimura¹, and H. Katagiri², ¹National Defense Academy, Japan, and ²Nagaoka National College of Tech.

[P4-069] The effect of surface treatment of CZTS absorber layer by ammonia solution

H. Miyazaki¹, M. Aono¹, H. Kishimura¹, and H. Katagiri², ¹National Defense Academy, Japan, and ²Nagaoka National College of Tech.

[P4-070] The effects of preferential etching treatment of CZTS absorber layer by deionized water

H. Miyazaki¹, M. Aono¹, H. Kishimura¹, and H. Katagiri², ¹National Defense Academy, Japan, and ²Nagaoka National College of Tech.

[P4-071] Structure and optical properties of CdS:O thin films by cathode sputtering

M. Nakajima¹, R. Asaba¹, A. Suzuki¹, Y.-G. Shim², K. Wakita¹, Kh. Khalilova³, Nazim Mamedov³, A. Bayramov³, and E. Huseynov³, ¹Chiba Institute of Tech., ²Osaka Prefecture Univ., and ³Institute of Physics, Azerbaijan

[P4-072] Excitonic emission on CuInS_2 epitaxial films by pulse laser deposition

R. Yoshida¹, T. Po-Han¹, Y.-G. Shim², and K. Wakita¹, ¹Chiba Institute of Tech. and ²Osaka Prefecture Univ.

[P4-073] Characterization of $\text{CuInS}_2\text{-Cu}_2\text{ZnSnS}_4$ crystals grown from the melt

K. Oishi, K. Nakamura, M. Yamazaki, S. Fukai, T. Shigeno and H. Katagiri, Nagaoka National College of Tech.

[P4-074] The effect of dextrin addition when $\text{Cu}_2\text{ZnSnS}_4$ thin film prepared by photochemical deposition

H. Shimotsuma and K. Moriya, Tsuruoka National College of Tech.

[P4-075] Electrical performance of InGaP solar cell irradiated with low energy electron beams

Y. Okuno¹, S. Okuda¹, T. Kojima¹, T. Oka¹, S. Kawakita², M. Imaizumi², H. Kusawake², ¹Osaka Prefecture Univ. and ²Japan Aerospace Exploration Agency

[P4-076] Growth of Cu_2SnS_3 Thin Films by Sulfurization for Earth-Abundant Solar Cells

S. Sato and M. Sugiyama, Tokyo Univ. of Science

[P4-077] Cu₂ZnSnS₄ thin film deposited by the PLD method

Y. Watanabe¹, Hiroki Miura¹, Y.-G. Shim², and K. Wakita¹, ¹*Chiba Institute of Tech. and*
²*Osaka Prefecture Univ.*

[P4-130] Characterization of defect phase in Cu(In,Ga)Se₂ prepared by three-stage process

H. Hagiya¹, T. Nazuka¹, M.M. Islam¹, T. Sakurai¹, A. Yamada², S. Ishizuka², S. Niki², K. Akimoto¹, ¹*Univ. of Tsukuba and* ²*National Institute of Advanced Industrial Science and Tech.*

[P4-078] Phase equilibria in the TiGaSe₂ - AgGaSe₂

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[P4-080] Effect of Sulfurization Time on the Properties of Sulfurized SnS Films

K.T. R. Reddy¹, M. V. Reddy¹, and M. Sugiyama², ¹*Sri Venkateswara Univ. and Tokyo Univ. of Sciences*

[P4-081] The synthesis of CIGS crystal using the crank ball mill

S. Yamada¹, H. Noji¹, T. Okamoto², and Y. Akaki¹, ²*Nagaoka Univ. of Tech.*
¹*Miyakonojo Coll. of Tech. and* ²*Nagaoka Univ. of Tech.*

[P4-082] Cu₂ZnSn(S,Se)₄ Thin-Film Solar Cells Prepared by Ultrasonic Spray

J. Kuwana¹, M. Goto¹, N. Suyama¹, Y. Zhang², Y. Kurokawa¹, A. Yamada¹, ¹*Tokyo Institute of Tech. and Toppan Printing Co. Ltd.*

[P4-083] Fabrication of Hybrid Perovskite Solar Cells Using Gas-Phase Reaction

H. Ebe¹ and H. Araki^{1,2}, ¹*Nagaoka Univ. of Tech. and* ²*PRESTO, Japan Science and Tech. Agency*

[P4-131] Epitaxial Growth of CIGS Thin Films on Mo-Coated Sapphire Substrates

H. Matsumori¹ and T. Nakada², ¹*Aoyama Gakuin Univ. and* ²*Tokyo Univ. of Science*

[P4-084] Hot-injection synthesis and characterization of Cu₂ZnSnS₄ nanocrystal ink

A. Mendez-Lopez¹, A. Morales-Acevedo¹, Y.J. Acosta-Silva¹, H. Katagiri², Y. Y. Matsumoto-Kuwabara¹, M. Ortega-López¹, ¹*Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional and* ²*Nagaoka National College of Tech.*

[P4-126] Fabrication and characterization of Cu₂ZnSn(S_xSe_{1-x})₄ thin film solar cells : Effects of composition ratio between sulfur and selenium

H. S. Yang¹, S. W. Shin², K.V. Gurav¹, E. A. Jo¹, S. J. Yeo¹, J. Y. Lee², and J. H. Kim¹, *Chonnam Nat. Univ. and* ²*Center for Nanomaterials and Chemical Reactions, South Korea*

[P4-127] Effect of Cu/Zn+Sn ratio on the properties of Cu₂ZnSnS₄ thin film and their application to solar cell

M. G. Gang¹, S. J. Yeo¹, S. W. Shin², C. W. Hong¹, E. A. Jo¹, H. S. Yang¹, J. H. Yun³, J. Gwak³, H. R. Choi³, and J. H. Kim¹, ¹*Chonnam Nat. Univ.*, ²*IBS*, and ³*KIER*

[P5-129] Comparison of Radiation Response of Component Subcells in IMM Triple-Junction Solar Cells Irradiated with High-Energy Electrons and Protons

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[P6-085] Blue phosphor synthesized with Eu-containing strontium aluminate by reaction on single crystalline magnesia

K. Komatsu¹, A. Nakamura^{1,2}, A. Kato¹, S. Ohshio¹, H. Saitoh¹, ¹*Nagaoka Univ. of Tech.* and ²*Chubu Chelest Co., Ltd.*

[P6-086] Investigation on Performances of Multi-quantum Barriers in InGaN/GaN Multi-quantum Well Heterostructures

Y.-F. Wu¹, J.-C. Lee², Y.-J. Hu² and T.-T. Kuo², ¹*Ming Chi Univ. of Tech.* and *Taipei Chengshih Univ. of Tech.*

[P6-087] Excited State Absorption in Ce-doped Ca₃Sc₂Si₃O₁₂ Opaque Polycrystalline Disc Observed by Reflective Pump-Probe Spectroscopy

H. Uchiki, K. Takahashi, and K. Tanaka, *Nagaoka Univ. of Tech.*

[P6-088] Effects of co-doping rare earth elements on photoluminescence and afterglow of SrGa₂S₄:Eu²⁺ phosphor

T. Tanabe, K. Taniguchi and, and A. Kato, *Nagaoka Univ. of Tech.*

[P6-089] Structure and Photoluminescence of Ca₃(Sc,Zn)₂Si₃O₁₂:Ce Green Phosphor Prepared by the Carbothermal Reduction Method

Y.-T. Nien¹, B. J. Li², Y. F. Wu², J. K. You¹, R. Y. Hsu¹, and I. G. Chen², ¹*National Formosa Univ.* and ²*National Cheng Kung Univ.*

[P6-090] Synthesis of SrGa₂S₄:Eu Green Emitting Phosphor using Liquid Phase Process

H. Kominami, Y. Nakanishi and K. Hara, *Shizuoka Univ.*

[P6-091] Preparation and Photoluminescent Properties of Mn-doped Deep Red Emitting Phosphor under Blue to Near Ultra Violet Excitations

S. Kawakita, H. Kominami, and K. Hara, *Shizuoka Univ.*

[P6-092] Numerical Simulation of Light Extraction in LEDs with the Patterned Contact

I. Khmyrova¹, N. Watanabe¹, Ju. Kholopova², A. Kovalchuk², E. Polushkin², and S. Shapoval², ¹*Univ. of Aizu* and ²*IMT RAS* (withdraw)

[P6-118] Triple-layer structure inorganic-organic hybrid light-emitting diodes containing CdSe-ZnS core-shell quantum dot emitters

N. Ohtani, and S. Yoshikawa, *Doshisha Univ.*

[P6-124] Electroluminescence from MOS Devices with (Tb + Ba) Doped Oxide under

DC and Pulse Voltage Drive

R. Fukuoka¹, T. Matsuda¹, H. Iwata¹, and T. Ohzone², *Toyama Prefectural Univ. and*²*Dawn Enterprise*

[P7-093] Charge transport and thermo-emf in TIGdS₂

E. M. Kerimova¹, S. N. Mustafaeva¹, S. M. Bidzinova², ¹*Azerbaijan National Academy of Sciences and*²*National Academy of Aviation, Azerbaijan (withdraw)*

[P7-094] Magnetodielectric effects in Co implanted TlInS₂ and TIGaSe₂ crystals

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[P7-095] Electronic Structure of BaFeO₃ studied by X-ray spectroscopy

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[P7-096] Transport and Structural Properties of Zn_{1-x}Mn_xGeAs₂ Under Pressure

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[P7-097] Preparation of Cu₂SnS₃ sintered compacts for thermoelectric devices

S. Nakamura and H. Funabiki, *Tsuyama National College of Tech.*

[P7-098] Features of Clusters Regime in Mn-doped ZnGeAs₂ Under High Pressure

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[P7-099] Synthesis of (Tr,M)YSr₂Cu₂O_z (Tr: Co, Ni; M: Mo, W)

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[P7-100] Observation of picosecond electron spin relaxation in InGaAsP

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[P7-101] Characterization of Ferromagnetic ZnSnAs₂:Mn Thin Films using Laser-assisted Three-dimensional Atom Probe Technique

H. Inoue, T. Kato, H. Toyota, H. Uchida and N. Uchitomi, *Nagaoka Univ. of Tech.*

[P7-102] Growth of Ferromagnetic InMnAs Thin Films by Low-temperature Molecular Beam Epitaxy on InP Substrates

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[P7-103] Crystal structure of multiferroics Ba₄Sm₂Fe₂Nb₈O₃₀ and Ba₄Gd₂Fe₂Nb₈O₃₀ at

high pressures

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[P7-104] Preparation and Characterization of CoFe₂O₄ Thin Films on MgO (100) Substrate by Metal organic Decomposition Method

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[P7-105] Structural and Thermoelectric Properties of Ternary Full-Heusler Alloys

M. Eguchi, K. Hayashi, and Y. Miyazaki, *Tohoku Univ.*

[P7-121] Thermally stable thermoelectric properties of Si:B /SiGe stacked layers prepared on Si substrates by layer-by-layer annealing methods

H. Toyota, T. Ookura, T. Takeda, and N. Uchitomi, *Nagaoka Univ. of Tech.*

[P7-122] Structural, optical and Magnetic Properties of Co-doped ZnO Nanorods Prepared by a thermal decomposition route

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[P8-106] Elemental substitution effects in multiferroic RFe₂O₄ (R: rare earths)

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[P8-107] Temperature behavior of dielectric function spectra and optical transitions in TiGaS₂

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[P8-108] Photo-induced change of surface relief on layered ternary thallium compounds

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[P8-109] Optical band gap of Li₈SiN₄ with disordered structure as a cathode material of lithium secondary batteries

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[P8-110] Phonon-phonon interaction in CdGa₂Se₄

T. G. Kerimova, N. A. Abdullayev, L. Y. Kengerlinski, I. A. Mamedova, N. I. Ibragimov, *Institute of Physics of Azerbaijan NAS*

[P8-111] Structural and vibrational properties of CdAl₂S₄ under high pressure: Experimental and theoretical approach

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[P8-112] Pulsing current in CuGaS₂ due to the applied electric field

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[P8-113] Excitonic emission of TIGaSe₂

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[P8-114] Eu 3d and 5p Electronic Structure of EuNi₂(Si_{1-x}Ge_x)₂ Studied by Hard X-Ray Photoemission Spectroscopy

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[P8-115] Preparation of Europium-doped GaN and AlGaN films grown by radical-nitrogen-assisted compound-source MBE

S. Yodate, Y. Koyama and S. Shirakata, *Ehime Univ.*

[P8-116] Micronization of Active Pharmaceutical Ingredient Using the Supercritical Carbon Dioxide Based Processes

C.-A. Lee¹, Y.-P. Chen¹, M. Tang², ¹*National Taiwan Univ.* and ²*Chinese Culture Univ.* (withdraw)

[P8-117] Nanostructured metal-organic frameworks with mixed organic ligands

W.-Y. Sun, C. H., and Q. Liu, *Nanjing Univ.*

[P8-119] Mechanical and antiwear properties of CrAlTiSiN composite coatings synthesized by a cathodic arc deposition process

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