

*International Workshop on  
Luminescent Materials 2015 (LumiMat'15)  
December 12-13, 2015, Kyoto, JAPAN*

**Saturday, December 12**

8:40–9:00    **Opening Remarks**

**Chair:**    **Setsubisa Tanabe (Kyoto U)**

9:00 – 9:40    Plenary Talk  
                  **“Lanthanide and Transition Metal Ions: Theory and Experimental Results”**  
                  Peter A. Tanner  
                  *The Hong Kong Institute of Education, Hong Kong S.A.R., P.R. China*

9:40 – 10:00    **I-1    “Concentration Quenching in LED Phosphors”**  
                          A.A. Setlur<sup>a</sup>, F. Garcia-Santamaria<sup>a</sup>, J.E. Murphy<sup>a</sup>, S.P. Sista<sup>a</sup>, and U. Happek<sup>b</sup>  
                          <sup>a</sup> *GE Global Research, NY*  
                          <sup>b</sup> *University of Georgia, Athens, GA*

10:00 – 10:20    **I-2    “A  $d^3$  story”**  
                          M.G. Brik<sup>a,b,c,d</sup>, A.M. Srivastava<sup>e</sup>  
                          <sup>a</sup> *Chongqing University of Posts and Telecommunications, Chongqing, P.R. China*  
                          <sup>b</sup> *University of Tartu, Tartu, Estonia*  
                          <sup>c</sup> *Jan Dlugosz University, Czestochowa, Poland*  
                          <sup>d</sup> *Polish Academy of Sciences, Warsaw, Poland*  
                          <sup>e</sup> *GE Global Research, New York, US*

10:20 – 10:40    **Coffee Break**

**Chair:**    **M. G. Brik (Tartu U)**

10:40 – 11:00    **I-3    “Nonempirical construction of multiplet energy diagrams for Mn<sup>4+</sup> in oxides  
                  with O<sub>h</sub>, D<sub>4h</sub>, D<sub>3d</sub> site symmetries”**  
                          Kazuyoshi Ogasawara  
                          *Kwansei Gakuin University, Sanda, Japan*

- 11:00 – 11:20    **I-4**    **“Theoretical chemistry approach for LED phosphors : Examples from some (oxy)nitrides”**  
M. Mikami<sup>a</sup>, S. Ponce<sup>b</sup>, Y. Jia<sup>b</sup>, A. Miglio<sup>b</sup>, X. Gonze<sup>b</sup>  
<sup>a</sup> *MCHC R&D Synergy Center, Inc. Yokohama, Japan*  
<sup>b</sup> *IMCN, Université catholique de Louvain, Chemin des étoiles 8, Belgium*
- 11:20 – 11:40    **I-5**    **“Revisit to Pr-doped perovskite-type oxide phosphors”**  
Yoshiyuki Inaguma, Shuhei Sasaki, Daisuke Mori  
*Department of Chemistry, Gakushuin University, Tokyo, Japan*
- 11:40 – 12:00    **I-6**    **“UV luminescence from Gd doped oxide thin films”**  
Kazushige Ueda<sup>a</sup>, Yuhei Shimizu<sup>a</sup>, Hiroshi Takashima<sup>b</sup>  
<sup>a</sup> *Kyushu Institute of Technology, Kitakyushu, Japan*  
<sup>b</sup> *Electronics Photonics Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*
- 12:00 – 12:20    **I-7**    **“Fiber fuse behavior veiled in its strong light emission”**  
Shin-ichi Todoroki  
*National Institute for Materials Science (NIMS), Tsukuba, Japan*
- 12:20            **Lunch**        Restaurant "*Heiwa*" (West of Campus)
- Chair: Jumpei Ueda (Kyoto U)**
- 13:20 – 14:00    Plenary Talk  
**“Understanding Energy Transfer in Lanthanide Doped (Nano)Crystals”**  
A. Meijerink, T. Senden, D. Yu, F.T. Rabouw  
*Utrecht University, Utrecht, The Netherlands*
- 14:00 – 14:20    **I-8**    **“Coexistence Eu<sup>2+</sup> and Eu<sup>3+</sup> luminescence; two sites or single site emission ?”**  
M. Grinberg  
*Gdańsk University, Gdańsk , Poland*
- 14:20 – 14:40    **I-9**    **“Lanthanide luminescence in boron containing nitridosilicate”**  
O.M. ten Kate<sup>a</sup>, R.J. Xie<sup>a</sup>, N. Hirosaki<sup>a</sup>  
<sup>a</sup> *National Institute for Materials Science (NIMS), Tsukuba, Japan*
- 14:40 – 15:00    **Coffee Break**

**Chair: Peter A. Tanner (HKIEd)**

- 15:00 – 15:20    **I-10**    **“Morphology control of phosphors using novel water assisted solid state reaction”**  
Kenji Toda<sup>a,b</sup>  
<sup>a</sup> *Niigata University, Niigata, Japan*  
<sup>b</sup> *N-Luminescence Corporation, Niigata, Japan*
- 15:20 – 15:40    **I-11**    **“Polycrystalline Ce:YAG Ceramic Phosphor for Powered-LED Applications”**  
Bin Xu<sup>a</sup>, Guocan Huang<sup>a</sup>, Peng Liu<sup>a</sup>, Yong Ye<sup>a</sup>, Jian Zhang<sup>a</sup>, Dingyuan Tang<sup>a</sup>  
<sup>a</sup> *Jiangsu Normal University, Shanghai, China*
- 15:40 – 16:00    **I-12**    **“Phosphor-glass composites for solid-state lighting”**  
Shunsuke Fujita  
*Nippon Electric Glass Co., Ltd., Otsu, Shiga, Japan,*
- 16:00 – 16:20    **I-13**    **“Direct Imaging of Light Emission Centers in Two-Dimensional Crystals and Their Luminescence and Photocatalytic Properties”**  
Shintaro Ida  
*Kyushu University, Fukuoka, Japan*
- 16:20 – 16:40    *Coffee Break*

**Chair: Marek Grinberg (Gdansk U)**

- 16:40 – 17:00    **I-14**    **“Escape from the trap: trapping and detrapping in persistent phosphors”**  
Philippe F. Smet<sup>a</sup>, Claude Tydtgat<sup>a</sup>, Mathias Kersemans<sup>b</sup>, Katleen Korthout<sup>a</sup>, Dirk Poelman<sup>a</sup>  
<sup>a</sup> *Ghent University, Gent, Belgium*  
<sup>b</sup> *Mechanics of Materials and Structures (MMS), Ghent University, Zwijnaarde, Belgium*
- 17:00 – 17:20    **I-15**    **“Controlling trap depth by aliovalent substitution in some oxynitride persistent phosphors”**  
Yixi Zhuang<sup>a</sup>, Rong-Jun Xie<sup>a</sup>, Setsuhisa Tanabe<sup>b</sup>  
<sup>a</sup> *Xiamen University, Xiamen, China*  
<sup>b</sup> *Kyoto University, Kyoto, Japan*

- 17:20 – 17:40    **I-16**    **“Absorption spectroscopy of shallow electron traps in SrAl<sub>2</sub>O<sub>4</sub>:Eu crystals induced by ultraviolet light irradiation”**  
Mamoru Kitaura  
*Yamagata University, Yamagata, Japan*
- 17:40 – 18:00    **I-17**    **“Biocompatible lanthanide materials for tumors targeting, imaging and inhibition”**  
Ka-Leung Wong  
*Hong Kong Baptist University, Hong Kong*
- 18:00            **Poster Session**
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## Sunday, December 13

**Chair: Philippe F. Smet (Ghent U)**

- 9:00 – 9:20    **I-18**    **“Broadband Sensitizers for Er<sup>3+</sup> luminescence emission at 1.54 μm”**  
E. Trave  
*Università Ca' Foscari Venezia, Mestre (Venezia), Italy*
- 9:20 – 9:40    **I-19**    **“Plasmonics towards high-efficiency light-emitting diodes”**  
Koichi Okamoto  
*Kyushu University, Fukuoka, Japan*
- 9:40 – 10:00    **I-20**    **“Localized surface plasmon resonance-assisted luminescence in nanostructured metal system”**  
Katsuhisa Tanaka<sup>a</sup>, Xiangen Meng<sup>b</sup>, Koji Fujita<sup>a</sup>, Shunsuke Murai<sup>a</sup>  
<sup>a</sup> *Kyoto University, Kyoto, Japan*  
<sup>b</sup> *School of Electrical and Computer Engineering and Birck Nanotechnology Center, Purdue University, West Lafayette, Indiana, United States*
- 10:00 – 10:20    **I-21**    **“Towards Highly Efficient Wavelength-Stable Red Light-Emitting Diodes Using Eu-Doped GaN”**  
Yasufumi Fujiwara<sup>a</sup>, Tomohiro Inaba<sup>a</sup>, Brandon Mitchell<sup>b</sup>, Takanori Kojima<sup>a</sup>, and Atsushi Koizumi<sup>a</sup>  
<sup>a</sup> *Osaka University, Suita, Osaka, Japan*  
<sup>b</sup> *University of Mt. Union, Alliance, OH, USA*

10:20 – 10:40 *Coffee Break*

**Chair: Andries Meijerink (Utrecht U)**

10:40 – 11:00 **I-22 “Optoelectronic communications with GaN:Eu red LED: Messages from atomic scale emission centers”**

Masashi Ishii<sup>a</sup>, Yasufumi Fujiwara<sup>b</sup>

<sup>a</sup> *National Institute for Materials Science (NIMS), Tsukuba, Japan*

<sup>b</sup> *Osaka University, Suita, Osaka, Japan*

11:00 – 11:20 **I-23 “High resolution and damage-free inverse photoemission spectroscopy: A new method to examine the unoccupied states of organic materials”**

Hiroyuki Yoshida

*Chiba University, Chiba, Japan*

11:20 – 11:40 **I-24 “Photoluminescence study of nanostructured solar cells”**

Takeshi Tayagaki

*Research Center for Photovoltaics, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

11:40 – 12:00 **I-25 “Optical properties of thermally activated delayed-fluorescence emitters for highly efficient organic light-emitting diodes - importance of higher triplet excited states -”**

Hiroyoshi Naito<sup>1, 2</sup>, Takashi Kobayashi<sup>1,2</sup>, Kenichi Goushi<sup>3,4, 5</sup>, Chihaya Adachi<sup>3,4, 5</sup>

<sup>1</sup> *Department of Physics and Electronics, Osaka Prefecture University, Sakai, Japan*

<sup>2</sup> *The Research Institute for Molecular Electronic Devices, Osaka Prefecture University, Sakai, Japan*

<sup>3</sup> *Center for Organic Photonics and Electronics Research, Kyushu University, Fukuoka, Japan.*

<sup>4</sup> *International Institute for Carbon Neutral Energy Research (WPI- $\dot{I}^2$ CNER), Kyushu University, Fukuoka, Japan.*

<sup>5</sup> *Japan Science and Technology Agency (JST), ERATO, Adachi Molecular Exciton Engineering Project, Fukuoka, Japan*

12:00 – 12:20 **Closing Ceremony**

13:30 **Banquet** *Mitokou (Gion area)*

## Poster session (December 12, 18:00-)

- P-1 “Construction of luminescent lanthanide coordination glass”**  
Yuichi Hirai<sup>a</sup>, Takayuki Nakanishi<sup>a</sup>, Yuichi Kitagawa<sup>b</sup>, Koji Fushimi<sup>b</sup>, Yasuchika Hasegawa<sup>b</sup>  
<sup>a</sup> Graduate School of Chemical Sciences and Engineering, Hokkaido University  
<sup>b</sup> Faculty of Engineering, Hokkaido University, Sapporo, Japan
- P-2 “Luminescence properties and solubility of Eu(III) complexes with non-symmetric diphosphine dioxide ligands”**  
Hiroki Iwanaga  
Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan
- P-3 “Bandgap Engineering of Bismuth Oxide-based Nanoparticles: A New Strategy for Upconversion Emission Control”**  
Michele Back, Enrico Trave  
Ca' Foscari University of Venice, Mestre, VE, Italy
- P-4 “Investigation of electron charging and detrapping processes in (Gd,Y)<sub>3</sub>(Al,Ga)<sub>5</sub>O<sub>12</sub>:Ce<sup>3+</sup>-Cr<sup>3+</sup> persistent phosphors”**  
Kazuki Asami<sup>a</sup>, Jumpei Ueda<sup>a</sup>, Mamoru Kitaura<sup>b</sup>, Setsuhisa Tanabe<sup>a</sup>,  
<sup>a</sup> Kyoto University, Kyoto, Japan  
<sup>b</sup> Yamagata University, Yamagata, Japan
- P-5 “Photosensitized luminescent Eu(III) coordination polymer with thermostability”**  
Ayako Nakajima<sup>a</sup>, Takayuki Nakanishi<sup>b</sup>, Yuichi Kitagawa<sup>b</sup>, Koji Fushimi<sup>b</sup>  
and Yasuchika Hasegawa<sup>b</sup>  
<sup>a</sup> Graduate School of Chemical Sciences and Engineering, Hokkaido University,  
<sup>b</sup> Faculty of Engineering, Hokkaido University, Sapporo, Hokkaido, Japan
- P-6 “Long Afterglow in  $\beta$ -SrAl<sub>2</sub>O<sub>4</sub>: Eu<sup>2+</sup>, Dy<sup>3+</sup> Crystals Synthesized by Crystallization of Glass and Solidification of Supercooling Melts”**  
K. Shinozaki<sup>a\*</sup>, M. Affatigato<sup>b</sup>, T. Honma<sup>a</sup>, T. Komatsu<sup>a</sup>  
<sup>a</sup> Nagaoka University of Technology, Nagaoka, Japan.  
<sup>b</sup> Coe College, Cedar Rapids, IA, United States
- P-7 “Fabrication of polycrystalline garnet persistent phosphors with super long persistent luminescence”**  
Jian Xu, Jumpei Ueda, and Setsuhisa Tanabe\*  
Kyoto University, Kyoto, Japan

- P-8** “X-ray Induced  $\text{Sm}^{3+} \rightarrow \text{Sm}^{2+}$  Valence Reduction in Glass-ceramics Containing  $\text{CaF}_2\text{:Sm}$  Nanocrystals and the Applications in Radiation Therapies”  
G. Okada<sup>a</sup>, J. Ueda<sup>b</sup>, S. Tanabe<sup>b</sup>, G. Belev<sup>c</sup>, T. Wysokinski<sup>c</sup>, D. Chapman<sup>c</sup>, T. Yanagida<sup>a</sup>,  
D. Tonchev<sup>d</sup>, S. Kasap<sup>d</sup>  
<sup>a</sup> *Nara Institute of Science and Technology (NAIST), Ikoma, Nara, JAPAN*  
<sup>b</sup> *Kyoto University, Kyoto, JAPAN*  
<sup>c</sup> *Canadian Light Source Inc., Saskatoon, SK, CANADA*  
<sup>d</sup> *University of Saskatchewan, Saskatoon, SK, CANADA*
- P-9** “Ammonia assisted synthesis and luminescent properties of pure phase Ba-SiAlON”  
W. Walerczyk, D. Stefanska, B. Bondzior, and P. J. Dereń  
*W. Trzebiatowski Institute of Low Temperature and Structure Research Polish Academy of Sciences, Wrocław, Poland*
- P-10** “Insight into Luminescent Mechanism of Pr-doped (Ca,Sr)TiO<sub>3</sub> Layer in Electroluminescent Devices from Binding Energy Diagram”  
Kotaro Yasuda, Jumpei Ueda and Setsuhisa Tanabe  
*Kyoto University, Kyoto, Japan*
- P-11** “Construction of VRBE Diagram for Developing a Orange Persistent Phosphor of Eu<sup>2+</sup>-Doped Ca<sub>3</sub>Si<sub>2</sub>O<sub>7</sub>”  
Ryomei Maki, Jumpei Ueda, Setsuhisa Tanabe  
*Kyoto University, Kyoto, Japan*
- P-12** “Investigation of Optical Property in Mn<sup>2+</sup> and Mn<sup>4+</sup>-Doped CaAl<sub>12</sub>O<sub>19</sub> Phosphors”  
Atsushi Hoshino, Jumpei Ueda, Setsuhisa Tanabe  
*Kyoto University, Kyoto, Japan*
- P-13** “Deepening Trap Depth in Y<sub>3</sub>Al<sub>2</sub>Ga<sub>3</sub>O<sub>12</sub>:Ce<sup>3+</sup>-Based Persistent Phosphors by Yb<sup>3+</sup> Codoping”  
Shun Miyano, Jumpei Ueda, Setsuhisa Tanabe  
*Kyoto University, Kyoto, Japan*