

Symposium 2C

Symposium 2C: Novel Chemical Processing; Chemical Tectonics for Materials Design

Main Organizers

- Katsuhisa Tanaka, Kyoto University, Japan
- Atsunori Matsuda, Toyohashi University of Technology, Japan
- Jianrong Qiu, Zhejiang University, China

Co-Organizers

- Aldo R. Boccaccini, Imperial College London, UK
- Plinio Innocenzi, Università di Sassari, Italy
- Peter G. Kazansky, University of Southampton, UK
- Dong-Pyo Kim, Chungnam National University, Korea
- Jianbei Qiu, Kunming University of Science and Technology, China
- Zainovia Lockman, Universiti Sains Malaysia, Malaysia
- Masahide Takahashi, Osaka Prefecture University, Japan

Oral Session

Monday, November 15

Room: 802

14:15 - 17:00: Novel Processing and Novel Functions

Chair: Masahide Takahashi (Osaka Prefecture University, Japan)

14:15 - 14:45

S2C-001 Synthesis of Ceramics and Composite Materials by Novel CVD Routes (Invited)

T. Goto; Tohoku University, Japan

14:45 - 15:15

S2C-002 Effect of Anodisation Parameters on the Formation of Porous Anodic Oxide on Ti, Zr, Nb and W (Invited)

Z. Lockman, S. Ismail; Universiti Sains Malaysia, Malaysia

15:15 - 15:45

S2C-003 Magnetophotonic and Magnonic Crystals with Magnetic Garnet Films for Various Optical and Magnetic Microdevices (Invited)

M. Inoue¹, A. V. Baryshev¹, J. Kim¹, P. B. Lim¹, H. Takagi², K. Yayoi³, T. Goto¹, S. Mito¹, S. M. Baek¹, K. Tobinaga¹, J. Noda¹, Y. Haga¹; ¹Toyohashi University of Technology, Japan, ²Toyota National College of Technology, Japan, ³Ibaragi National College of Technology, Japan

15:45 - 16:00

S2C-004 Scattering-based Hole Burning in Macroporous Ce³⁺:Y₃Al₅O₁₂ Crystal Prepared via Sol-gel Route Accompanied by Phase Separation

K. Iwata, K. Fujita, S. Murai, K. Tanaka; Kyoto University, Japan

16:00 - 16:15 Break

16:15 - 16:30

S2C-005 Broadband Optical Amplification of Micro-structure Controlled Glasses

J. Qiu^{1,2}, S. Zhou¹, B. Wu¹; ¹Zhejiang University, China, ²South China University of Technology, China

16:30 - 16:45

S2C-006 Preparation and Evaluation of Oxide and Multiple Oxide Ceramics by Mist Process

M. Sato¹, S. Fujita², A. Nakahira^{1,3}; ¹Tohoku University, Japan, ²Kyoto University, Japan, ³Osaka Prefecture University, Japan

16:45 - 17:00

S2C-007 Effects Of Raw Materials And Temperature On The Growth Of 6H-SiC By PVT

Y. Shi, P. Dai, J. Yang, G. Liu; Xi'an Jiaotong University, China

Tuesday, November 16

Room: 802

9:30 - 11:45: Self-Assembly and Organic-Inorganic Hybrid

Chair: Katsuhisa Tanaka (Kyoto University, Japan)

9:30 - 9:45

S2C-008 Self-assembly Synthesis and Photocatalytic Properties of Layered Oxide Structure with Single-nm Thickness

M. Ohtaki, M. Mori; Kyushu University, Japan

9:45 - 10:00

S2C-009 Photo-Induced Fabrication of Titania-Polymer Hybrid Films with Tunable Hierarchical Structures and Stimuli-Responsive Property

M. Takahashi; Osaka Prefecture University, Japan

10:00 - 10:15

S2C-010 Synthesis and Material Design for Heteroanion Compounds

K. Machida; Osaka University, Japan

10:15 - 10:30

S2C-011 Structure Manufacturing of Proton-conducting Organic-inorganic Hybrid Phosphosilicate Membranes by Solventless Synthesis

Y. Tokuda¹, S. Oku¹, T. Yamada², M. Takahashi¹, T. Yoko¹, H. Kitagawa^{1,2}; ¹Kyoto University, Japan, ²Kyushu University, Japan

10:30 - 10:45 **Break**

10:45 - 11:15

S2C-012 A Combined Bottom-up and Top-down Approach towards the Design of Thin Films on Multiple Length Scales (Invited)

L. Malfatti¹, P. Falcaro², S. Costacurta³, H. Amenitsch⁴, B. Marmiroli⁴, F. C. Nerin⁴, P. Innocenzi¹; ¹Università di Sassari, Italy, ²CSIRO, Australia, ³Associazione CIVEN, Italy, ⁴Austrian Academy of Sciences, Austria

11:15 - 11:45

S2C-013 Versatile Functionality of Hydrophilic SiO₂-TiO₂ Resin and Pre-ceramic Polymers for Microstructured Applications (Invited)

D.-P. Kim; Chungnam National University, Korea

14:15 - 16:00: Molecular Tectonics

Chair: Atsunori Matsuda (Toyohashi University of Technology, Japan)

14:15 - 14:45

S2C-014 Development of Bioinspired Inorganic/Organic Hybrids (Invited)

T. Kato; The University of Tokyo, Japan

14:45 - 15:15

S2C-015 Engineering Ultraporous Hybrid Crystals Using Ceramic Micro- and Nano-Particles (Invited)

P. Falcaro, A. Hill, D. Buso; CSIRO Materials Science and Engineering, Australia

15:15 - 15:30

S2C-016 Novel Manner of Crystal Growth through Dehydration and Polycondensation into Multilayered Structures in Zinc Hydroxide Compounds

T. Tokunaga¹, E. Hosono², Y. Oaki¹, H. Imai¹, H. Zhou², S. Fujihara¹; ¹Keio University, Japan, ²National Institute of Advanced Industrial Science and Technology, Japan

Symposium 2C

15:30 - 15:45

S2C-017 Nanostructured Artificial Nacre Prepared From Montmorillonite via a Drying Process
F. Gridi-Bennadji, G. Lecomte-Nana, J-P. Bonnet, S. Rossignol; GEMH, ENSCI Limoges, France

15:45 - 16:00

S2C-018 Relationship between Interfacial Instabilities and Mechanical Strength of Three-layer (PP/HDPE/PP) Polymer Structure
M. M. Ranjbarann; Shahid Rajaei University, Iran

16:00 - 16:15 Break

16:15 - 18:00: Effect of External and Enhanced Fields

Chair: Jianbei Qiu (Kunming University of Science and Technology, China)

16:15 - 16:30

S2C-019 Selective Growth and SERS Property of Gold Nanoparticles on Amorphized Silicon Surface
T. Matsuoka, M. Nishi, M. Sakakura, Y. Shimotsuma, K. Miura, K. Hirao; Kyoto University, Japan

16:30 - 16:45

S2C-020 Redox Mechanism of Ag/AgCl Nanoparticles Dispersed in Organosilsesquioxane-Titania Matrix
G. Kawamura, Y. Tsurumi, H. Muto, M. Inoue, A. Matsuda; Toyohashi University of Technology, Japan

16:45 - 17:00

S2C-021 Enhancement of Optical Birefringence in Transition-Metal-Oxide Thin Films Containing Silver Nanoparticles
T. Tsujiguchi, S. Murai, K. Fujita, K. Tanaka; Kyoto University, Japan

17:00 - 17:15

S2C-022 Surface Plasmon Enhanced Optical Birefringence in Thermally Poled Tellurite Glass
R. Hattori, S. Murai, K. Fujita, K. Tanaka; Kyoto University, Japan

17:15 - 17:30

S2C-023 Orientation of Carbon Nano-fiber in Carbon/Silica Composite Prepared under High Magnetic Field
N. Kitamura¹, K. Fukumi¹, K. Takahashi², I. Mogi², S. Awaji², K. Watanabe²; ¹National Institute of Advanced Industrial Science and Technology, Japan, ²Tohoku University, Japan

17:30 - 18:00

S2C-024 Physical, Chemical, and Biological Phenomena within Vector Space Developed around Polarized Hydroxyapatite and Related Ceramics (Invited)
K. Yamashita; Tokyo Medical and Dental University, Japan

Poster Session

Tuesday, November 16

Room: Event Hall

12:00 -14:00

S2C-P001 In Situ Observation of Solidifying Process of Inorganic Powder Materials during a Hydrothermal Hot-pressing
T. Onoki; Osaka Prefecture University, Japan

S2C-P002 Effects of Subsequent Treatments on Transparency of Y-zeolite Ceramics by a Hydrothermal Hot-pressing
T. Onoki¹, T. Wakihara², A. Nakahira^{1,3}; ¹Osaka Prefecture University, Japan, ²Yokohama National University, Japan, ³Tohoku University, Japan

- S2C-P003 Synthesis and Evaluation of A-zeolite by Rotary Hydrothermal Treatments**
T. Shirai¹, Y. Kawabe¹, T. Moriguchi¹, T. Wakihara², A. Nakahira^{1,3}; ¹Osaka Prefecture University, Japan, ²Yokohama National University, Japan, ³Tohoku University, Japan
- S2C-P004 Synthesis and Characterization of LTA-type Zeolite by Microwave-assisted Hydrothermal Processing**
K. Kumadani¹, T. Moriguchi¹, Y. Takamatsu¹, A. Nakahira^{1,2}; ¹Osaka Prefecture University, Japan, ²Tohoku University, Japan
- S2C-P005 Synthesis of Zeolite Membrane on Ceramic Tubular Supports by Hydrothermal Method**
T. Moriguchi¹, H. Ohnishi², A. Nakahira^{1,3}; ¹Osaka Prefecture University, Japan, ²Nikkato Corporation, Japan, ³Tohoku University, Japan
- S2C-P006 Synthesis of Zeolite from Various Slag Materials by Soft Chemical Processing**
M. Sato¹, A. Nakahira^{1,2}; ¹Tohoku University, Japan, ²Osaka Prefecture University, Japan
- S2C-P007 Synthesis of Titanate Nanotubes by Planet-Rotary-Hydrothermal Process**
Y. Takamatsu¹, M. Sato², A. Nakahira¹; ¹Osaka Prefecture University, Japan, ²Tohoku University, Japan
- S2C-P008 Synthesis and Characterization of Potassium Niobate based Ceramics by Various Hydrothermal Processings**
S. Hayashi¹, S. Tajiri¹, Y. Takamatsu¹, M. Sato², A. Nakahira^{1,2}; ¹Osaka Prefecture University, Japan, ²Tohoku University, Japan
- S2C-P009 Morphological Control of Hydroxyapatite Precipitate from High-Concentration Hydroxyapatite Solution Using Microwave Irradiation**
H. Yoshida, T. Toyama, Y. Kojima, N. Nishimiya; Nihon University, Japan
- S2C-P010 Effect of Mn Addition on Microstructure of Hydroxyapatite and their Properties**
T. Nagayasu¹, Y. Nishio¹, M. Sato², H. Murata³, K. Matsunaga³, A. Nakahira^{1,2}; ¹Osaka Prefecture University, Japan, ²Tohoku University, Japan, ³Kyoto University Yoshida, Japan
- S2C-P011 Synthesis and Evaluation of Hydroxyapatite with Addition of Europium**
Y. Nishio¹, M. Sato², H. Murata³, K. Matsunaga³, A. Nakahira^{1,2}; ¹Osaka Prefecture University, Japan, ²Tohoku University, Japan, ³Kyoto University, Japan
- S2C-P012 Water/Alcohol Separation Utilizing Ultra-hydrophobic Multilayered Silica Particles Prepared by Self-Assembly Technique**
Y. Daiko¹, T. Jin², T. Yazawa; ¹University of Hyogo, Japan, ²National Institute of Advanced Industrial Science and Technology, Japan
- S2C-P013 Solution Synthesis of Organic/Inorganic Composite Coaxial Nanocable Consisting of Zinc Oxide and Polypyrrole**
T. Oki, Y. Oaki, H. Imai; Keio University, Japan
- S2C-P014 Tunable Magnetoresponse Hybrid Capsules Formed with Fe₃O₄ Nanoparticles and Lipid Membrane**
Y. Imai, K. Katagiri, K. Koumoto; Nagoya University, Japan
- S2C-P015 Synthesis of LDH Modified with Other Cation and Exfoliation Behaviors**
S. Tajiri¹, T. Okumiya², A. Nakahira^{1,3}; ¹Osaka Pref. Univ., Japan, ²Tayca CoLtd, Japan, ³Tohoku University, Japan
- S2C-P016 Evaluation for Mechanical Property of Novel Al₂O₃-Carbon Nanocomposite Fabricated by Electrostatic Adsorbed Assembly Technique**
N. Hakiri¹, H. Muto¹, K. Katagiri², G. Kawamura¹, A. Matsuda¹, M. Sakai¹; ¹Toyohashi University of Technology, Japan, ²Nagoya University, Japan

Symposium 2C

S2C-P017 Fabrication of Crystalline-Oriented Porous Titania Films on Transparent Electrode by Electrophoretic Deposition

K. Kawai¹, T. Uchikoshi², T. Suzuki², H. Muto¹, A. Matsuda¹; ¹Toyohashi University of Technology, Japan, ²National Institute for Materials Science, Japan

S2C-P018 Synthesis and Characterization of Co-doped TiO₂ Powder with Meso-porous Structure by Anodization Process

Y. Kawabe¹, S. Yamamoto¹, M. Sato², M. Takeuchi¹, M. Matsuoka¹, M. Anpo¹, A. Nakahira^{1,2}; ¹Osaka Prefecture University, Japan, ²Tohoku University, Japan

S2C-P019 New Synthesis of Novel Nanomaterials Using Anodic Oxidation Process

S. Yamamoto¹, Y. Kawabe¹, M. Takeuchi¹, M. Matsuoka¹, M. Anpo¹, A. Nakahira^{1,2}; ¹Osaka Prefecture University, Japan, ²Tohoku University, Japan

S2C-P020 Fabrication of Mesoporous (100-x)SiO₂-xTiO₂ Matrix Loaded with Shape-Controlled Au Nanoparticles

T. Okuno, G. Kawamura, H. Muto, A. Matsuda; Toyohashi University of Technology, Japan

S2C-P021 Preparation of Palladium/Titania Optical Hydrogen Sensor Operated at Room Temperature by Environmentally Friendly Process

H. Oda¹, R. Araki², J. Hamagami², G. Kawamura¹, H. Muto¹, A. Matsuda¹; ¹Toyohashi University of Technology, Japan, ²Kurume National College of Technology, Japan

S2C-P022 Low Temperature Crystallization of Titanium Oxide Films by Hot-water Treatment and Application for Dye-sensitized Solar Cell

H. Sakamoto, M. A. B. M. Nor, G. Kawamura, H. Muto, A. Matsuda; Toyohashi University of Technology, Japan

S2C-P023 Characterization of SiO₂/SiAlON Phosphor Composite Films Prepared by Using SiO₂ Coated Phosphor

T. Kitabatake^{1,2}, T. Uchikoshi², F. Munakata¹, Y. Sakka², N. Hirosaki²; ¹Tokyo City University, Japan, ²National Institute for Materials Science, Japan

S2C-P024 Synthesis of Hexagonal Plate-Shaped Y₂O₃:Eu Red Phosphor by Precipitation from Homogeneous Solution

N. Naruse¹, K. Tomita^{1,2}, Y. Miura¹, M. Kakihana²; ¹Tokai University, Japan, ²Tohoku University, Japan

S2C-P025 Optical Control of Terahertz Transmission through Non-doped Silicon Subwavelength Hole Arrays

T. Okada, S. Tsuji, K. Hirao, K. Tanaka, K. Tanaka; Kyoto University, Japan

S2C-P026 Precise Analysis of Bi₂Sr₂Ca_{n-1}Cu_nO_y Superconducting Whiskers by SR-XPS and HR-TEM

H. Tanaka¹, H. Yoshikawa², C. Tsuruta², Y. Matsui², S. Kishida³; ¹Yonago National College of Technology, Japan, ²National Institute for Materials Science, Japan, ³Tottori University, Japan

S2C-P027 The Effect of Post Heat Treatment on Synthesis of NiTi-TiC via Mechanical Activating

R. Ghaderi, M. R. Rahimpour, M. Alizadeh; Materials and Energy Research Center, Iran

S2C-P028 Evaluation and Development of New Applications for CeO₂-based Ceramics with High Oxygen Separation Ability

A. Nakahira^{1,2}, E. Maeda³, D. M. Taylor⁴, T. Yamamoto⁵; ¹Osaka Prefecture University, Japan, ²Tohoku University, Japan, ³Maeda Materials Co., Ltd, Japan, ⁴Ceramtec INC, USA, ⁵National Defense Academy, Japan