

8th International Workshop on
Flow and Fracture of Advanced Glasses

Oct. 27-30, 2024

Program

Sunday, Oct. 27, Evening

18:00 - 20:00 **Welcome Reception** (2nd Floor)

Monday, Oct. 28, Morning

9:00 - 9:15

Registration

9:15 - 9:20

Welcome address Prof. K. Maeda (Chair of FFAG8)

Session 1 (Chair: Prof. Y. Yue) Water and Glass

9:20 - 9:50

Origin of slow crack growth of oxide glasses (Invited)

Minoru Tomozawa (Rensselaer Polytechnic Institute, U.S.)

9:50 - 10:20

Energy dissipation during crack propagation – a local or global phenomenon? (Invited)

Joachim Deubener (TU Clausthal, Germany)

10:20 - 10:50

Glass with hydration-induced compressive stress profiles (Invited)

Timothy M Gross (Corning Inc., U.S.)

Coffee Break (2nd Floor) + **Registration**

Session 2 (Chair: Prof. T. Rouxel) Flow & Fracture in the Multi-Length Scale

11:20 - 11:50

Structural heterogeneity and crack initiation in aluminosilicate glasses (Invited)

Yuanzheng Yue (Aalborg U, Denmark)

11:50 - 12:20

On the origin of delayed elasticity (Invited)

Yann Gueguen (U. Rennes, France)

Lunch (2nd Floor) + Registration

Monday, Oct. 28, Afternoon

Session 3 (Chair: Prof. M. M. Smedskjaer) High Toughness

13:30 - 14:00

Fracture behavior of vitreous particulate composites, as characterized by the SEPB and DCDC methods, and by means of in-situ experiments in a X-ray tomograph (Invited)

Tanguy Rouxel (U. Rennes, France)

14:00 - 14:30

The effect of microstructure on the mechanical properties of 5BaO.8SiO₂ glass-ceramics (Invited)

Francisco C. Serbena (U. Ponta Grossa, Brazil)

14:30 - 14:50

Fracture toughness enhancement via metal nanoparticle dispersion in silica glass fabricated by spark plasma sintering

Kenji Shinozaki (AIST, Japan)

Coffee Break (2nd Floor) + **Registration**

Session 4 (Chair: Prof. L. Wondraczek) Indentation Mechanism

15:20 - 15:50

Understanding mechanical properties of glasses through diffraction experiments (Invited)

Morten M. Smedskjaer (Aalborg U., Denmark)

15:50 - 16:10

In-situ observation of densification, cracking, and structural changes in silica glass during indentation using nanofocus X-ray scattering

Johan F. S. Christensen (Aalborg U., Denmark)

- 16:10 - 16:40** **Nanoindentation Characterization of Structural Glasses: What Can We Do More? (Invited)**
Jae-il Jang (Hanyang U., South Korea)
- 16:40 - 17:00** **Photoelasticity reveals new insights of plasticity in oxide glasses**
Gustavo Alberto Rosales Sosa (Nippon Electric Glass Co.,Ltd., Japan)
- 17:00 - 17:20** **Investigation of densification mechanism of Mg-aluminosilicate glass with molecular dynamic simulation and void calculation analysis**
Yoshinari Kato (Nippon Electric Glass Co.,Ltd., Japan)
- 17:20 - 18:30** **Poster Session (2nd Floor)**
- 1 **Mapping the deformation zone in oxide glasses during contact loading by in-situ X-ray nano diffraction**
Mohamed faizal ussama Jalaludeen (Aalborg U., Denmark)
 - 2 **Indenting glasses with indenters of varying stiffness and sharpness**
Johan F. S. Christensen (Aalborg U., Denmark)
 - 3 **Ductile behavior by ball indentation in glass-ceramics**
Kei Maeda (Tokyo University of Science, Japan)
 - 4 **In-situ observation of fracture in glass subjected to high-velocity impact of a small blunt object**
Mikio Nagano (AGC Inc., Japan)
 - 5 **Enhancement of fracture toughness of glasses by dispersion of Ni nanoparticles in near surface layer**
Hiroki Yamada (Osaka U., Japan)
 - 6 **Crack growth and mechanical toughness of ZrO₂ -containing Li₂O-Na₂O-P₂O₅-SiO₂ glass ceramics**
Tetsuji Yano (Institute of Science Tokyo, Japan)
 - 7 **Evaluation of mechanical toughness of La₂O₃-Al₂O₃-ZrO₂-based glass-ceramics for encapsulation of MA and LLFP of high-level radioactive nuclear wastes**
Yushin Kinoshita (Institute of Science Tokyo, Japan)
 - 8 **Crack initiation load of silica glass fracture surfaces formed during sub-critical crack growth**
Jun Endo (AGC Inc., Japan)
 - 9 **Synthesis of glass ceramic foams obtained from sodium-lime glass waste by the polymeric replica method**
Crislene Rodrigues da silva Morais (Federal U. Campina Grande, Brazil)
 - 10 **Development of lanthanide-doped silicone-aluminum vitreous monoliths by sol-gel process with prospects of use in lasers**
Crislene Rodrigues da silva Morais (Federal U. Campina Grande, Brazil)

Welcome Dinner (All the attendees are invited.) @ RUKO (5 min. walk from the venue)

Tuesday, Oct. 29, Morning

Session 5 (Chair: Dr. S. Yoshida) Tailoring Disorderiness

9:10 - 9:40 **Metamorphosis of oxide glasses under densification: Insights from NMR and inelastic X-ray scattering (Invited)**
Sung keun Lee (Seoul National U., South Korea)

9:40 - 10:10 **Shear deformation of aluminosilicate glass under pressurized condition (Invited)**
Akihiro Yamada (U. Shiga Prefecture, Japan)

10:10 - 10:30 **History matters for glass structure and mechanical properties**
Mohamed faizal ussama Jalaludeen (Aalborg U., Denmark)

~~Coffee Break (2nd Floor)~~

Session 5 *Continued* (Chair: Prof. J. Deubener) Tailoring Disorderiness

10:30 - 11:00 **Electron-beam induced athermal deformation: A novel understanding for viscoplastic deformation and mechanical amorphization of amorphous and crystalline silica (Invited)**
In-suk Choi (Seoul National U., South Korea)

11:00 - 11:30 **Tailorability of structural disorder and the mechanical performance of real-world glasses (Invited)**
Lothar Wondraczek (U. Jena, Germany)

11:30 - 11:50 **Quantitative analysis of boson peak behavior of glassy materials:
Application of coherent potential approximation analysis to various glasses**
Tatsuya Mori (Tsukuba U., Japan)

Lunch @ Azzurri Kagura-zaka (3 min. walk from the venue)

Excursion & Dinner

(Tentative schedule)

13:00 - 21:30 Tokyo National Museum
Asakusa-Town
TOKYO SKYTREE
Yakata-bune dinner cruising!



Wednesday, Oct. 30, Morning

Session 6 (Chair: Prof. L. Ding) Various Types of Bonding

9:10 - 9:40 Stochastic nature of incipient plasticity in metallic glasses (Invited)

Upadrasta Ramamurty (Nanyang Technological U., Singapore)

9:40 - 10:10 Temperature dependence of pressure sensitive flow in bulk metallic glass composites (Invited)

Lakshmi narayan Ramasubramanian (Indian Institute of Technology Delhi, India)

10:10 - 10:30 Shear transformations in metallic glasses without excessive and predefinable defects

Zhen Zhang (Chengdu U. Technology, China)

Coffee Break (2nd Floor)

Session 6 *Continued* (Chair: Prof. K. Maeda) Various Types of Bonding

11:00 - 11:30 Deciphering the structure descriptors governing the mechanical properties of zeolitic imidazolate framework glasses (Invited)

Tao Du (Aalborg U., Denmark)

Session 7 (Chair: Prof. K. Maeda) Overcoming Brittleness

11:30 - 12:00 Improved scratch resistance in oxide glasses through 2D coatings: A combined experimental and atomistic simulation study (Invited)

Anoop Krishnan (Indian Institute of Technology Delhi, India)

12:00 - 12:20 Mechanical and electrochemical properties of lithium aluminoborate glasses

Theany To (U. Rennes 1, France)

Lunch (2nd Floor)

Wednesday, Oct. 30, Afternoon

Session 8 (Chair: Prof. A. Yamada) Rapid-Quenching

13:30 - 14:00 Levitation: Contactless measurements of melt properties, structure, dynamics and solidification (Invited)

Florian Kargl (German Aerospace Centre, Germany)

14:00 - 14:30 Mechanical characteristics of aluminosilicate glasses with various thermal histories (Invited)

Roman Sajzew (U. Jena, Germany)

14:30 - 14:50 Mechanical properties of rare-earth aluminate glasses

Eriya Takahashi (Hiroshima U., Japan)

Coffee Break (2nd Floor)

Session 9 (Chair: Dr. S. Yoshida) Ion-Exchanging

15:10 - 15:40 Effect of high-pressure on relaxation, deformation and diffusion of silicate glass (Invited)

Linfeng Ding (Donghua U., China)

15:40 - 16:10 A new approach to formulize compressive stress in chemically strengthened glass: A fundamental equation and the verification (Invited)

Nobuaki Terakado (Tohoku U., Japan)

16:10 - 16:15 Closing remarks Dr. S. Yoshida