

ナノガラスシンポジウムに向けて

ICG 組織委員会 運営委員会委員長

平尾 一之

Symposium on “Nano-Technology of Glass”

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Congress Organizing Committee

現在、情報通信、建築、輸送機材、医療機器など多種多様な製品にガラス材料が用いられているが、今後、高強度、軽量、高耐熱性など従来の材料物性からの飛躍的な向上と、また、21世紀の基幹産業の一つとして期待されている光通信産業の発展を支えるキーマテリアルとしての新たな機能性ガラスに対する基盤技術の開発が求められている。

これらの実現に向けて、ガラス中にイオンや微粒子を分散させる、超短波レーザー光を照射する、超微細加工を施すといったナノテクノロジーを駆使した、ガラスとナノテクノロジーの融合、すなわち「ナノガラス技術」の開発が進められている。

今回、ICG開催に当たって、皆さんの強い要望のもとナノガラスシンポジウムが企画された。本シンポジウムは、下表に示すように平成13年度から5ヵ年計画で進められているNEDO「ナノガラス技術」プロジェクトのこれまでの研究成果を中心に、日本におけるナノガラス研究の中心の方々による依頼講演で構成されており、日本の総力を結集したものである。また、ナノテクノロジーを用いたガラスの研究を行っている、国際的に第一線でご活躍の研究者の方方にもご講演頂けることとなった。このシンポジウムをきっかけとしてナノガラス技術の更なる確立により、様々な産業の新たな発展の一助となることを願うものである。

Symposium on "Nano-Technology of Glass" (2004 9/28 & 30)

2004 9/28 9:00-17:00		
INVITED: Nano-technology on Glass in UK (tentative)	Peter Kazansky	UK
INVITED: Nano-technology on Glass in USA (tentative)	Minoru Tomozawa	USA
1 Micropatterning method inside glass using femtosecond laser and diffractive optical element	Yutaka Kuroiwa	Japan
2 Formation of nano-grating inside silica glasses by using single femtosecond laser beam	Yasuhiko Shimotsuma	Japan
3 Photon localization and novel optical properties in random photonic structures	Koji Fujita	Japan
4 Athermalization of $\text{Li}_2\text{O-Al}_2\text{O}_3\text{-SiO}_2$ glasses with nano-scale crystallization	Yusuke Himei	Japan
5 Structure change at the surface of densified silica glass by laser annealing	Naoyuki Kitamura	Japan
INVITED: Nano-technology on Glass in China (tentative)	Fuxi Gan	China
INVITED: Nano-technology on Glass in French (tentative)	Jacques Lucas	France
INVITED: Fabrication of tailored nanostructures in glasses by e-beam	Himanshu Jain	USA
6 Fabrication and magneto-optical properties of quantum nanostructures of magnetic semiconductors in glass	Akihiro Murayama	Japan
7 Nonlinear optical properties of cobalt oxide thin films	Hiroki Yamamoto	Japan
8 Eu^{3+} -luminescence enhancement near metal nanoparticles embedded in sol-gel derived glasses	Tomokatsu Hayakawa	Japan
9 Efficient green up-conversion luminescence in Yb^{3+} - Ho^{3+} Co-doped nano-crystals precipitated transparent oxyfluoride glass-ceramics	Jianbei Qiu	Japan
10 Transmission loss characteristics of SiN waveguides fabricated by liquid source PECVD	Junichi Kageyama	Japan
11 Nanoparticle-doped glassy films for photonic applications	Rui Almeida	Portugal
12 Influences of nanocrystal-size and matrix on third-order optical non-linearity for thin films prepared by rf-sputtering	Hiroyuki Nasu	Japan
2004 9/30 9:00-12:00		
13 New routes to functional glasses	Satoru Inoue	Japan
14 Preparation and properties of glasses with nanosized secondary phases sintered from nanopowders	Rolf Clasen	Germany
15 Gas permeation through the membrane with aligned nano-pores by organic-inorganic hybrid.	Masaru Yamashita	Japan
16 Manufacturing of silica glasses by electrophotonic deposition of nanosized particles and powder mixtures	Rolf Clasen	Germany
17 Preparation of titania nano-rod array on titanium substrates by microflux method	Kanji Tsuru	Japan
18 Preparation and control of structure in inorganic-organic hybrid materials	Kazuhiro Kawabe	Japan
19 A new micro-fabrication technique of glass surface by wet etching process	Yasuhiro Saito	Japan
20 Electroluminescence from CdSe Nanocrystal-Doped ITO Films on SiO_2 Glass Substrates	Hiroyuki Nasu	Japan

Poster Session (2004 9/30 12:00-14:00)

1	Preparation of sol-gel films with nano-scaled structure using phase separation	Utsuno Futoshi	Japan
2	Fabrication of Periodical Structure with High Refractive Index Difference by Femtosecond Laser Pulses	Nobuhito Takeshima	Japan
3	Thermochemistry of oxyfluoride glasses containing LaF ₃ nanocrystals	Marcin Sroda	Poland
4	Structural relations between raman-modes and thermomechanical properties of glasses with near-zero coefficient of thermal expansion	Jan Tabellion	Germany
5	Effect of femtosecond laser irradiation conditions on strength improvement of the soda lime silicate glass	Takafumi Iwano	Japan
6	FLN spectra of Er ³⁺ ions in R ₂ O ₃ -Al ₂ O ₃ -SiO ₂ (R = Y and La) glasses	Hiroyuki Inoue	Japan
7	Surface plasmon resonance and second harmonic generation of AuCu alloy nanoparticles-doped glasses	Tomokatsu Hayakawa	Japan
8	Simulation of the optical properties of Ho: ZBLAN glass	Hiroyuki Inoue	Japan
9	Effect of antimony oxide on deposition, and nonlinear optical properties of metallic copper nanoparticles in phosphate glasses	Hideki Yoshida	Japan
10	Ultrafast exciton dynamics in quantum structures of II-VI magnetic semiconductors	Akihiro Murayama	Japan
11	Micro-photoluminescence spectroscopy for quantum dots of II-VI semiconductors in glass	Akihiro Murayama	Japan
12	The New International Materials Institute on New Functionality in Glass	Himanshu Jain	USA