The Forum on the Science and Technology of Silicon Materials 2014
October 19 to 22, 2014
Hamamatsu, Japan

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Organized by:

The 145th Committee on Processing and Characterization of Crystals of the Japan Society for the Promotion of Science (JSPS)

Organizing Committee of the Forum on the Science and Technology of Silicon Materials 2014 (Hamamatsu)

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Preface

It is a great pleasure for us to welcome all of you to the 7th Forum on the Science and Technology of Silicon Materials (Silicon Forum) in Hamamatsu, Japan from October 19th to 22nd, 2014. This forum was founded by Professor Emeritus Koji Sumino (Tohoku University) in 1997 and 1999 at Kazusa Academia Park in Chiba Prefecture. Subsequently, the venues were changed to Shonan Village Center of Hayama-cho in Kanagawa Prefecture in 2001 and 2003, and to Toki Messe in Niigata Prefecture in 2007, and to Okayama University in 2010. The Okayama forum was co-organized by the 145th Committee on Processing and Characterization of Crystals of the Japan Society for the Promotion of Science (JSPS) together by the Organizing Committee of the Silicon Materials Science and Technology Forum.

The fundamental policy of the forum has been: (1) the promotion of the mutual cooperation between the people in the industry and the academia, (2) the education and stimulation of young scientists and engineers, and (3) the realization of face-to-face discussion on various issues concerning silicon materials at the international level. The forum has been playing an important role to transfer the fundamental knowledge to the new generations in the field of the science and technology of silicon materials. One should point out that this forum is one of a few international conferences, for which Japanese scientists and engineers have been organizing voluntarily. The scope of the forum has been extended from the original topics, i.e., growth technologies of bulk silicon and epi-wafers, characterization and control of defects and impurities, gettering and wafer technologies, to the topics on SIMOX, SOI, SGOI and strained wafer technologies, high-power devices, solar cells and photovoltaic materials.

The 7th forum has moved to Hamamatsu in Shizuoka prefecture. Hamamatsu area thrived along the old Tokaido, the main road which for centuries has connected Tokyo and Kyoto. Today there still stands many cultural properties showing this historical legacy. For instance, Hamamatsu Castle, built by Tokugawa Ieyasu, should not be missed. There are three major industries: motorcycles, musical instruments, and textiles. In recent years, however, high-tech industries like optics and electronics are achieving rapid development, which are closely related to this silicon forum.

On behalf of the organizing committee we would like to express our sincere thanks to Prof. Michio Tajima, general chairperson of the 145 committee for the Japan Society for the Promotion of Science, Institute Space and Astro. Sci. / JAXA & Meiji Univ., and Prof. Fumio Shimura, Shizuoka Institute of Science and Technology for many warm supports during the preparation for this forum.

October 19, 2014

Yutaka YOSHIDA, Shizuoka Institute of Science and Technology
Koji SUEOKA, Okayama Prefectural Univ.
Yoshifumi YAMASHITA, Okayama Univ.
Hiroshi YAMADA-KANETA, Kyushu Institute of Technology
Susumu MURAKAMI, National Institute of Advanced Industrial Science and Technology

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Si Forum program								
#	time	Sunday 19th October		session subjects	Title	Name	Affliation	Nationality
		15:30-15:40	Opening					
			(1) Session	Diffusion & Defects in Si materials				
S1-1	60min	15:40-16:40		Chairs: Yoshida & Shimura	Diffusion Studies in silicon materials	H. Bracht	University of Muenster	Germany
S1-2	60min	16:40-17:40			Defect Engineering in silicon materials	W.Bergholz	Jacobs University Bremen	Germany
		18:00-20:00	Get-together party					
		Monday 20th October						
			(2) Session	Defects & Impurities				
S2-1	60min	8:30-9:30		Chairs: Sueoka & Vanhellemont	Atomic defects and impurities in silicon materials based on density functional theory	J. Coutinho	University of Aveiro	Portugal
S2-2	60min	9:30-10:30			Defect evaluation techniques in electronic and solar grade silicon materials	A. R. Peaker	The University of Manchester	UK
		10:30-11:00	Coffee					
S2-3	40min	11:00-11:40			The role of time scale in processing of Czochralski silicon material	G. Kissinger	IHP GmbH	Germany
S2-4	40min	11:40-12:20			Surface acoustic wave diagnosis of vacancy orbital in surface layer of silicon wafer	T. Goto	Niigata University	Japan
		12:20-13:20	Lunch					
			(3) Session	Power devices and related materials				
S3-1	30min	13:20-13:50		Chairs: Kakimoto & Murakami	Silicon Power Device and the Material Requirements -For New Generation Power Electronics-	I. Omura	Kyuushu Institute of Technology	Japan
S3-2	30min	13:50-14:20			Defects and impurities in Si wafers for Power Devices	H. Yamamoto	Chiba University	Japan
S3-3	30min	14:20-14:50			High resolution Imaging and Discriminations of Extended Defects in 4H-SiC	H. Tsuchida	Central Research Institute of Electric Power Industry	Japan
S3-4	30min	14:50-15:20			Top-seeded solution growth of SiC single crystal using metal solvents	K. Kusunoki	Nippon Steel & Sumitomo Metal Corporation	Japan
		15:20-16:00	Coffee/Forum photo					
S4-1	90min	16:10-17:40	(4) Session	short presentations	3min x 30 poster presentations			
S4-P	120min	17:40-19:40		poster session				
		Tuesday 21st October						
			(5) Session	Si Crystal Growth				
S5-1	40min	8:30-9:10		Chairs: Taishi & Falster	Impact of thermal stress and dopant on the v/G criterion in Si single crystal growth from a melt	J. Vanhellemont	Ghent University	Belgium
S5-2	40min	9:10-9:50			Control of intrinsic point defects in growing single crystal Si	K. Nakamura	Okayama Prefectural University	Japan
S5-3	30min	9:50-10:20			Defect formation behavior due to interaction between light elements and point defects in CZ-Si crystal growth	W. Sugimura	SUMCO Cooperation	Japan
		10:20-10:50	Coffee					
			(6) Session	Si Wafer and Devices				
S6-1	30min	10:50-11:20		Chairs: Kaneta & Kissinger	Present status and problems in development of 450 mm wafer	K. Takaishi	SUMCO Cooperation	Japan
S6-2	30min	11:20-11:50			Impact of Rapid Thermal Oxidation at Ultrahigh-Temperatures on Oxygen Precipitation Behavior in Czochralski-Silicon Crystals	K. Araki	GlobalWafers Japan Co., Ltd.	Japan
S6-3	30min	11:50-12:20			Point defect control in Si crystal growth and wafer annealing	R. Falster	MEMC Electronic Materials	Italy
		12:20-13:20	Lunch					
			(7) Session	Evaluation techniques				
S7-1	30min	13:20-13:50		Chairs: Fukata & Bracht	Quantitative analysis of donor and acceptor impurities in photovoltaic Si by photoluminescence spectroscopy	M. Tajima	JAXA/ Meiji University	Japan
S7-2	40min	13:50-14:30			Nuclear methods to study defects in Si materials using heavy ion accelerators	G. Langouche	The University of Leuven	Belgium
S7-3	30min	14:30-15:00			Two-bit logic operation using a single phosphorus donor in isotopically enriched 28Si	K. Itoh	Keio University	Japan
		15:00-15:20	Coffee					
			(8) Session	Photonics				
S8-1	40min	15:20-16:00		Chairs: Ishikawa & Wada	High-speed Si optoelectronic devices	L. Vivien	University of Paris Sud	France
S8-2	30min	16:00-16:30			Optoelectronic devices based on Si, silica and Ge	H. Fukuda	NTT Microsystem Integration Laboratories/NTT Photonics Laboratories	Japan
S8-3	30min	16:30-17:00			Near-infrared light emission from Ge on Si	K. Oda	Hitachi Cooperation	Japan
		17:00-17:10	Pause					
			(9) Session	Recent topics from Hamamatsu				
S9-1	30min	17:10-17:40		Chairs: Yoshida & Langouche	The development of CCD image sensor for Subaru telescope by Hamamatsu	H. Suzuki	Hamamatsu Photonics K.K.	Japan
S9-2	30min	17:40-18:10			Silicon detectors for ATLAS and CMS experiments at LHC	K. Yamamura	Hamamatsu Photonics K.K.	Japan
		18:40-21:30	Banquet					
		Wednesday 22nd October						
			(10) Session	Solar cells / crystal growth				
S10-1	30min	8:30-9:00		Chairs: Sekiguchi & Macdonald	Computer simulation for multicrystal silicon growth	K. Kakimoto	Kyushu University	Japan
S10-2	30min	9:00-9:30			Large-scale implementation of floating cast method to grow high-quality multicrystalline silicon ingot	N. Usami	Nagoya University	Japan
S10-3	30min	9:30-10:00			External and internal gettering of interstitial iron in silicon for solar cells/PL	D. Macdonald	The Australian National University	Australia
S10-4	30min	10:00-10:30			The impact of Ge codoping on the enhancement of photovoltaic characteristics of B-doped Czochralski grown Si cry	M. Arivanandhan	Shizuoka University	Japan
		10:30-11:00	Coffee					
			(11) Session	Si technology for future				
S11-1	40min	11:00-11:40		Chair: Tajima	Technology trends and Business challenges in silicon wafer industry	S. Koyama	GlobalWafers Japan Co., Ltd.	Japan
	20min	11:40-12:00	Closing					
		12:00-18:00	Excursion		Mt. Fuji/Shin-Fuji/Departure			