The 12th Individual Discussion Meeting of the Advanced Power Semiconductors Section

of the Japan Society of Applied Physics

Channeling ion implantation technology for **WBG** semiconductors

ÿ Date and time: Tuesday, July 23, 2024, 13:00-17:00 ÿ
Venue: Kwansei Gakuin University, Tokyo Marunouchi Campus, Lambus Hall
https://www.kwansei.ac.jp/access/marunouchi

Wide-gap (WBG) semiconductors have a higher atomic density in the crystal than conventional semiconductor materials, so the depth to which impurities can reach using normal ion implantation is relatively shallow. Therefore, high-energy ion implantation is required to create device structures with impurity distribution deep in the material. On the other hand, by using the channeling phenomenon, it is possible to make ions reach deep regions without increasing the energy, and this has been the subject of active research in recent years. However,

The channeling phenomenon in WBG semiconductors is not yet fully understood as a scientific theory, and there are still high technical hurdles to overcome in introducing it into mass production processes. Therefore, in this individual forum, we will discuss the current status and issues of channeling ion implantation technology, as well as

the path to practical application.

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13:00~13:05Opening remarks

13:05~13:35 "Introduction: Channeling ion implantation into WBG semiconductors"

Masashi Kato (Nagoya Institute of Technology)

13:35~14:05 " Historical and physical understanding of **Al** channeling ion implantation into **SiC** "

Kazuhiro Mochizuki, Tomoaki Nishimura, Tomoyoshi Mishima (Hosei University)

14:05~14:35 "Channeling Ion Implantation Simulation" Hideki Minamikawa (Ion Techno Center)

14:35~15:05 "High Energy Channeling Ion Implantation Aiming for Superjunction Structure Application"

Yoshiyuki Yonezawa (National Institute of Advanced Industrial Science and Technology)

15:05~15: 20Break

15:20~15:50 "Application of ion implantation technology to **SiC devices** " Hiroyuki Ito (Applied Materials)

15:50~16:20 " Mass production equipment for channeling ion implantation into **SiC** " Takashi Kuroi (Nissin Ion Equipment)

16:20~17:00 Discussion based on information provided by participants

17:00~17:10 Closing remarks

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ÿ About participation: WBG This is a forum where all participants will participate and discuss channeling ion implantation technology into semiconductors. Participants may be asked by the chairperson to make comments. In that case, please be sure to comment. In that case, comments using slides are welcome. ÿ Registration: Please register via the online registration system (click

here). Deadline is Monday, June 17th. This notice will be printed.

For items, https://formok.com/f/zs5r56x9 Please access from here. ÿ Participation fee

(tax included): After registering, you will be informed of the online payment method. Advanced Power Semiconductors Subcommittee members* 2,000 yen, general public 4,000 yen.

Advanced Power Semiconductors Subcommittee student members are free, general students 1,000 yen. *Those who belong to the Advanced Power Semiconductors Subcommittee supporting members will be treated as Advanced Power Semiconductors Subcommittee members. *We will notify you of the download link for the proceedings (PDF) on Tuesday, July 16th. No refunds will be given after that date. ÿ Request for cooperation at the on-site event: If you have a fever, please refrain from attending on the day.

Wearing a mask at the venue is Let's assume that.

Contact: (For inquiries regarding various procedures, please contact the Japan Society of Applied Physics Office)

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