# Program (Monday, 17 October 2022)

| Time (Beijing) | Program |
|---|---|
| 8:10-8:30 | **Opening Ceremony, Lijun Liu** |
| **Plenary lectures** | |
| **Session Chair: Lijun Liu** | |
| 8:30-9:00 | **Plenary lecture-1 by Koichi Kakimoto: Recent progress of numerical modeling in crystal growth process** |
| 9:00-9:30 | **Plenary lecture-2 by Jeffrey J. Derby: Modeling high-pressure, high-temperature diamond crystal growth** |
| 9:30-9:45 | **Group photo** |
| 9:45-10:00 | **Coffee break** |

## Session 1: PV SILICON

**Session Chair: Thierry Duffar**

**Session Co-Chair: Zaoyang Li**

| Time (Beijing) | Authors | Title of Presentation | Affiliation |
|---|---|---|---|
| 10:00-10:20 | **Tingting Du**, Lu Cheng, Yongfei Wen, Chaoguang Zhang | The application of simulation in the field of mono-crystal silicon technology **(Invited)** | LONGi Green Energy Technology Co., Ltd |
| 10:20-10:40 | **M. Srinivasan**[1], P. Ramasamy[1], Noritaka Usami[2] | Growth of mc-Silicon ingot by DS Process: Computational Modeling, Experimental and Machine Learning Studies **(Invited)** | 1.SSN College of Engineering<br>2.Nagoya University |
| 10:40-10:55 | Xin Liu[1], Hiroyuki Tanaka[1], Kentaro Kutsukake[2], and Noritaka | Multiscale modeling and optimization on the solidification and the grain evolution of the SMART ingot grown by DS-Si process | 1.Nagoya University<br>2. RIKEN |

| | | | |
|---|---|---|---|
| | Usami[1] | | |
| 10:55-11:10 | Thi-Hoai-Thu Nguyen[1,2], Jyh-Chen Chen[1], Chun-Hsien Li[1] | Controlling heat and oxygen transport by heater power levels and double-partition depths during CCz silicon crystal growth | 1.National Central University<br>2.Nong Lam University |
| 11:10-11:25 | G. Aravindan , M. Srinivasan, P. Ramasamy | Numerical Investigation of cone shape grooved DS furnace block to improve the mc-Si ingot quality | Sri Sivasubramaniya Nadar College of Engineering |
| 11:25-11:40 | Wenjia Su, Jiaqi Li, Jiulong Li, Zhicheng Guan, Zhen Zhang | Numerical study on the horizontal position of water-cooling jacket of Czochralski monocrystalline silicon | Jiangsu University |
| 11:40-11:55 | P. Karuppasamy, A. Suganraj, M. Bharathwaj, P. Periyannan, N. Balamurugan, M. Srinivasan, P. Ramasamy | Improving Convexity on Melt-Crystal Interface Shape on the Directional Solidification Process | Sri Sivasubramaniya Nadar College of Engineering |
| 11:55-12:15 | Alexandra Popescu, **Daniel Vizman** | Particularities of the thermal and oxygen concentration instabilities in a Czochralski process for solar silicon growth**(Invited)** | West University of Timisoara |
| 12:15-14:00 | **Break** | | |
| **Session 2: Silicon semiconductor** | | | |
| **Session Chair: Noritaka Usami** | | | |
| **Session Co-Chair: Kentaro Kutsukake** | | | |
| Time (Beijing) | Authors | Title of Presentation | Affiliation |
| 14:00-14:20 | Oleg Weinstein, **Simon Brandon** | Revisiting some questions regarding the interplay between capillarity, growth kinetics and heat transfer in relation to the geometry of crystals grown via the Czochralski method **(Invited)** | Technion – Israel Institute of Technology |
| 14:20-14:40 | **Chunmei Wu**, Ruiqi Huang, Xiyuan Xue, Lan Peng, Yourong Li | Effect of deformed free surface on the pattern transition and evolution of thermocapillary flow during Czochralski crystal growth **(Invited)** | Chongqing University |

| | | | |
|---|---|---|---|
| 14:40-15:00 | **K. Zaidat**[1], S. Al-Radi[1,2], H. Abouchi[2], Fl. Baltaretu[3], X. Han[1], M. Al-Radi[1,2], C. Garnier[2], G. Hasan[2], R. Ernst[2], A. Nehari[4], K. Lebbou[4] and A. Kharicha[5] | Modelling of innovative cold crucible for single crystal growth **(Invited)** | 1.Univ. Grenoble Alpes, SIMAP<br>2.CNRS, SIMAP<br>3.Technical University of Civil Engineering Bucharest<br>4. Université de Lyon<br>5 Christian-Doppler Laboratory for Metallurgical Applications of Magnetohydrodnamics |
| 15:00-15:15 | Roman Rolinsky, François Dupret | Comparison of FLET method for numerical modeling of a large CZ system with horizontal DC magnetic field with full 3D simulations and experimental measurements | FEMAG S.A. |
| 15:15-15:30 | Weichao Huang, Jiahao Li, Ding Liu | Study on inverse heat transfer at the solid-liquid interface of Czochralski silicon single crystal based on sequential function specification method | Xi'an University of Technology |
| 15:30-15:45 | Songsong Chen[1], Wenkai Liu[1,2], Zhongying Xue[1], Xing Wei[1,3] | Numerical simulation of industrial 300 mm Czochralski single silicon growth with transverse magnetic field | 1.Shanghai Institute of Microsystem and Information Technology<br>2.ShanghaiTech University<br>3.Zing Semiconductor Corporation |
| 15:45-16:00 | Y. Li[1,2], A.D. Smirnov[3], R. Qin[1,2], Z. Zhang[4], Z. Shan[1,2], H. Fu[4] | Extended investigation of an abrupt crystal diameter change during Czochralski silicon growth in transverse magnetic field | 1.GRINM National Engineering Research Center for Integrated Circuit Key Materials<br>2.GRINM Semiconductor Materials Co., Ltd.<br>3.Semiconductor Technology Research d.o.o. Beograd<br>4. Suzhou STR Software Technology |

| | | | |
|---|---|---|---|
| | | | Co., Ltd. |
| 16:00-16:15 | **Coffee break** | | |
| **Session 3: Algorithm method /Software development** | | | |
| **Session Chair: Natasha Dropka** | | | |
| **Session Co-Chair: Kaspars Dadzis** | | | |
| Time (Beijing) | Authors | Title of Presentation | Affiliation |
| 16:15-16:35 | **Kentaro Kutsukake** | Applications of machine learning to crystal growth research **(Invited)** | RIKEN |
| 16:35-16:55 | **Kaspars Dadzis**, Arved Enders-Seidlitz, Iason Tsiapkinis | Open source models for multiphysical simulation of crystal growth**(Invited)** | Leibniz-Institut für Kristallzüchtung (IKZ) |
| 16:55-17:10 | Andrey Vorob'ev , Vladimir Kalaev , Kirill Mazaev | Chemical model of sapphire crystal growth by Ky technique | Soft-Impact Ltd. |
| 17:10-17:25 | Heyu Lu, Songzhe Xu, Ling Shi, Chaoyue Chen, Jiang Wang, Zhongming Ren | A multi-scale numerical study based on phase field method for microstructure of Ni-based superalloys in additive manufacturing | Shanghai University |
| 17:25-17:40 | Ling Shi, Songzhe Xu, Jingjing Li, Chaoyue Chen, Jiang Wang, Zhongming Ren | A phase field based computational framework for simulating microstructure growth under magnetic field in alloy solidification | Shanghai University |
| 17:40-17:55 | Xin Zhang[1], Wenliang Lu[2], Zun Liang[1], Yashen Wang[1], Songtai Lv[1], Hongtao Liang[1], Brian B. Laird[3], Yang Yang[1] | Characterization of the local collective dynamics at the crystal-melt interface | 1. East China Normal University<br>2.Changzhou Institute of Technology<br>3. University of Kansas |
| 17:55-18:10 | Shuyan Shi, Ding Liu, Zhiran Huo | Simulation of thermoelastic coupling in silicon single crystal growth based on alternate two-stage physical-informed neural | Xi'an University of Technology |

| | | | |
|---|---|---|---|
| | | network | |
| 18:30-20:30 | **Banquet** | | |

# Program (Tuesday, 18 October 2022)

| **Session 4: Wide bandgap semiconductors (I)** | | | |
|---|---|---|---|
| **Session Chair: Koichi Kakimoto** | | | |
| **Session Co-Chair: Wenjia Su** | | | |
| Time (Beijing) | Authors | Title of Presentation | Affiliation |
| 8:10-8:30 | **Koichi Kakimoto**, Isao Takahashi, Taketoshi Tomida, Kei Kamada, Yongzhao YAO, Satoshi Nakano, Akira Yoshikawa | 3D calculation studies of dislocation density in a β-$Ga_2O_3$ crystal grown by vertical Bridgman method**(Invited)** | 1.Tohoku University<br>2.C&A Co.<br>3.Japan Fine Ceramics Center<br>4. Kyushu University |
| 8:30-8:50 | **Liang Wu** | Multiscale modeling and simulation of AlN growth: from marcoscale to nanoscale**(Invited)** | Ultratrend Technologies Inc. |
| 8:50-9:05 | Dan Wu[1,2], Ning Xia[2], Keke Ma[2], Jiabin Wang[2], Cheng Li[1,2], Hui Zhang[1,2] | Numerical simulation of β-$Ga_2O_3$ seeds with different transparency in Czochralski system | 1.Zhejiang University<br>2.ZJU-Hangzhou Global Scientific and Technological Innovation Center |
| 9:05-9:20 | Wenjia Su, Zhicheng Guan, Jiulong Li, Zhen Zhang, Jiaqi Li, Wenjia Su | Numerical study on the effects of argon gas guidance system on the growth of β-$Ga_2O_3$ by Czochralski method | Jiangsu University |
| 9:20-9:35 | Pengfei Han, Bing Gao, Botao Song, Yue Yu, Xia Tang, Botao Liu | Optimization of Ammonothermal GaN Growth Based on Numerical Simulation and Machine Learning | Wuhan University |
| 9:35-9:50 | Fuchang Li, Lei He, Chaoyang Yan, Xiaofang Qi, Wencheng Ma, Jianli Chen, Yongkuan Xu, Zhanggui Hu | Effects of crystal and crucible rotation on the carbon distribution during solution growth of SiC single crystal | Tianjin University of Technology |

| | | | |
|---|---|---|---|
| 9:50-10:05 | **Coffee break** | | |
| **Session 5: Wide bandgap semiconductors (II)** | | | |
| **Session Chair: Liang Wu** | | | |
| **Session Co-Chair: Yifan Dang** | | | |
| Time (Beijing) | Authors | Title of Presentation | Affiliation |
| 10:05-10:25 | Wensen Ai, **Xuejiang Chen** | Nucleation preference of trimers during SiC (0001) surface epitaxial growth under low coverage**(Invited)** | Xi'an Jiaotong University |
| 10:25-10:40 | Yifan Dang[1] , Xinbo Liu[1] , Yuma Fukami[1] , Shuyang Ma[1] , Can Zhu[1], Shunta Harada[1], Miho Tagawa[1], Toru Ujihara[1,2] | Simulation of Macrosteps Development for Solution Growth of SiC | 1.Nagoya University<br>2.GaN-OIL, AIST |
| 10:40-10:55 | Huiqin Zhou, Yifan Dang , Yuma Fukami , Hisaki Takemoto, Shunta Harada, Miho Tagawa, Toru Ujihara | Phase-Field Simulation of Inclusion Defect Generation in SiC Solution Crystal Growth Method | Nagoya University |
| 10:55-11:10 | Rong Wang, Jiajun Li, Xiaodong Pi, Deren Yang | Modeling dislocation behaviors during the nitrogen doping of 4H silicon carbide | Zhejiang University |
| 11:10-11:25 | Xuefeng Han, Deren Yang, Xiaodong Pi | Numerical analysis of species transport in the PVT-SiC process | Zhejiang University |
| 11:25-11:40 | Binjie Xu, Xuefeng Han, Deren Yang, Xiaodong Pi | Optimization of the thermal field of 8-inch SiC crystal growth by PVT method with "3 separation heater method" | 1.ZJU-Hangzhou Global Scientific and Technological Innovation Center<br>2.Zhejiang University |
| 11:40-11:55 | Chun-Hung Chen, Cheng-Kai Xu | Effects of graphite cover on heat and flow transport during PVT-SiC process | Xinxin Semiconductor （Group）Co., Ltd. |
| 11:55-12:15 | **C. Kranert**[1], M. Hainke[1,2], | Modeling the growth of ultrawide bandgap materials**(Invited)** | 1.Fraunhofer IISB |

| | | | |
|---|---|---|---|
| | J. Friedrich[1] | | 2.Ostbayerische Technische Hochschule (OTH) Amberg-Weiden |
| 12:15-14:00 | **Break** | | |
| **Session 6: Novel Topics** | | | |
| **Session Chair: Wolfram Miller** | | | |
| **Session Co-Chair: Chunmei Wu** | | | |
| Time (Beijing) | Authors | Title of Presentation | Affiliation |
| 14:00-14:20 | H. Koch[1*], S. Hürner[1], T. Jauss[2], T. Sorgenfrei[2], M. Hainke[1,3], C. Kranert[1], **J. Friedrich**[1] | Modeling of solidification processes under consideration of particle transport in the melt for terrestric and microgravity conditions**(Invited)** | 1.Fraunhofer IISB<br>2.University of Freiburg<br>3.Ostbayerische Technische Hochschule (OTH) Amberg-Weiden |
| 14:20-14:40 | Agneta M. Balint, **Stefan Balint** | Inequalities for shaped crystal growth by pulling down method**(Invited)** | West University of Timisoara |
| 14:40-14:55 | Mingwen Chen, Zidong Wang | The Evolution and Morphological Stability of a Particle in a Binary Alloy Melt | University of Science and Technology Beijing |
| 14:55-15:10 | Qinghua Yu, Fuwu Yan, Yuxiang Peng, Rui Ao | Numerical simulation of $CO_2$ hydrate crystal growth for direct-contact cold energy storage | Wuhan University of Technology |
| 15:10-15:25 | Qin Shu, Jia-Jia Yu, Chun-Mei Wu, You-Rong Li | Numerical simulations of thermocapillary-buoyancy convection in a side-heated annular pool with different depths | Chongqing University |
| 15:25-15:40 | Jiayu Dong, Simin Wang | Ultrasound enhancement of p-xylene crystallization characteristics and regulation mechanism of experimental research | Xi’an Jiaotong University |
| 15:40-15:55 | **Coffee break** | | |

| Session 7: Vapor and solution growth | | | |
|---|---|---|---|
| **Session Chair: J. Friedrich** | | | |
| **Session Co-Chair: Qinghua Yu** | | | |
| Time (Beijing) | Authors | Title of Presentation | Affiliation |
| 15:55-16:15 | **Wolfram Miller**[1], Tobias Schulz[1], Liverios Lymperakis[2], Andrew Klump[1], Martin Albrecht[1] | Kinetic Monte Carlo Simulations of AlN and AlGaN epitaxy on AlN(0001) **(Invited)** | 1.Leibniz-Institut für Kristallzüchtung (IKZ)<br>2.University of Crete |
| 16:15-16:35 | **Roberto Bergamaschini**, Francesco Montalenti, Leo Miglio | Continuum modeling of 3D semiconductor epitaxy: thermodynamic and kinetic driving forces behind morphological and compositional evolution **(Invited)** | University of Milano-Bicocca |
| 16:35-16:50 | Ta-Shun Chou, Saud Bin Anooz, Raimund Grüneberg, Natasha Dropka, et al | Machine Learning-assisted Homoepitaxial Growth of (100) β-$Ga_2O_3$ by MOVPE | Leibniz-Institut für Kristallzüchtung (IKZ) |
| 16:50-17:05 | Ba-Phuoc Le[1], Wei-Jie Lin[1], Jyh-Chen Chen[1], Chieh Hu[2], Chun-Chin Tu[2], Liang-Chin Chen[2] | Effect of side inlet on deposition rate near wafer edge during APCVD deposition | 1.National Central University<br>2.Global Wafer Co., Ltd |
| 17:05-17:20 | Hang Liu[1], Mingwei Li[2], Duanyang Chen[3,4], Hongji Qi[3,4], Shuxian Chen[1], Yi Xiao[1], Yue Hu[1], Binbin Lin[1] | Numerical simulation of thermal stress during ADP crystal growth by solution circulating method | 1.Civil Aviation Flight University of China<br>2.Chongqing University<br>3.Shanghai Institute of Optics and Fine Mechanics, CAS<br>4.Hangzhou Institute of Optics and Fine Mechanics |
| 17:20-17:35 | Vladimir Artemyev, Andrey Smirnov | CVDSim3D as the 3D tool for simulation of Global Heat | Semiconductor Technology |

| | | | |
|---|---|---|---|
| | | Transfer in AMAT Centura Silicon epitaxy process | Research d.o.o. Beograd (STR Beograd) |
| 17:35-18:30 | **Session 8: Poster Session** | | |
| Poster NO. | Authors | Title of Poster | Affiliation |
| P1 | Xingchun Xu, Jiecai Han, Jiaqi Zhu | Adaptive phase-field-based lattice Boltzmann simulation for three-dimensional dendrite growth | Harbin Institute of Technology |
| P2 | Ling Shi, Songzhe Xu, Jingjing Li, Heyu Lu, Chaoyue Chen, Jiang Wang, Zhongming Ren | Modification and application of virtual submesh cellular automata method in additive manufacturing | Shanghai University |
| P3 | Bangjie Geng, Hao Fu | New development in modeling of PVT SiC bulk crystal growth | Suzhou STR Software Technology Co. Ltd. |
| P4 | Chunhui Tian, Shuang Liu, Shenglan Wu, Jiacheng Li, Dejun Chen, Yong Liu, Zhiyong Zhong | The Fluorescence Transformation Efficiency Research of the Hexagonal microcrystalline column model of CsI(Tl) Film | University of Electronic Science and Technology of China |
| P5 | Fuman Jiang[1], Zhongying Xue[1], Xing Wei[1,2] | Modeling and Simulation of Silicon Epitaxy Growth in the Atmospheric Chemical Vapour Deposition Reactor | 1.Shanghai Institute of Microsystem and Information Technology<br>2.Zing Semiconductor Corporation |
| P6 | Yashen Wang, Zun Liang, Xin Zhang, Wenliang Lu, Zhiyong Yu, Xiangming Ma, Hongtao Liang, Yang Yang | A few progress in predicting solidification kinetics using the time-dependent Ginzburg-Landau solidification theory | East China Normal University |
| P7 | Wenliang Lu[1], Hongtao Liang[2], Xiangming Ma[2], Zifeng Yuan[2], Xin Zhang[2], Zun Liang[2], Yang Yang[2] | Atomistic Simulation Study of the Crystal-Melt Interface Excess Stresses | 1.Changzhou Institute of Technology<br>2.East China Normal University |
| P8 | Liangyu Zhou, Zaoyang Li, Lijun | Bubble behaviors at the solid-melt interface in crystal growth | Xi’an Jiaotong University |

| | | | |
|---|---|---|---|
| | Liu | | |
| P9 | Jinwen Shi, Binjiang Zhai, Yazhou Zhang, Cheng Cheng | Bulk/surface engineering of g-$C_3N_4$ for high-efficiency photocatalytic $H_2$ production | Xi'an Jiaotong University |
| P10 | Yuanchun He, Wanyuan Shi | Three-dimensional Nonlinear Thermocapillary Convection of Low Prandtl Number Fluid in Annular Pools | Chongqing University |
| P11 | Dongming Mo[1], Qin Shu[2], Jiajia Yu[2], Chunmei Wu[2], Yourong Li[2] | Prandtl number dependence of instability of thermocapillary convection in an annular pool with a heated inner cylinder | 1.Chongqing Industry Polytechnic College<br>2.Chongqing University |
| P12 | Yong Liu[1], Liangqi Zhang[1], Hao Liu[2], Yao Xiao[1], Yue Wang[1], Hao Li[1], Zhong Zeng[1] | Effect of radius ratio on the instability of the mixed convection in the Czochralski model | 1.Chongqing University<br>2.Chongqing Jiaotong University |
| P13 | Xiaofang Qi[1,2,3], Junlei Wang[3], Wencheng Ma[1] | Effects of water-cooled jacket on the oxygen distribution during the Czochralski silicon crystal growth process | 1.Tianjin University of Technology<br>2.Jiangsu University<br>3.Jiangsu Huantai Group Co., Ltd. |
| P14 | Shanshan Tang[1], Jinping Luo[1], Chuanbo Chang[1,2], Quanzhi Wang[3], Lijun Liu[1] | A new form of impurity cluster in casting quasi-single crystalline silicon | 1.Xi'an Jiaotong University<br>2.Golden Solar Silicon Industry Technologie (XuZhou) Co., Ltd.<br>3.Yanshan University |
| P15 | Chuanbo Chang[1,2], Shanshan Tang[1], Jiancheng Li[1], Changzhen Wang[1], Zaoyang Li[1], Lijun Liu[1] | Improvement of the thermal field to reduce edge dislocation of cast monocrystalline silicon | 1.Xi'an Jiaotong University<br>2.Golden Solar Silicon Industry Technologie (XuZhou) Co., Ltd. |
| P16 | Jiancheng Li, Zaoyang Li, Lijun Liu, Yuqi Jin, Changzhen Wang | Effects of melt depth on oxygen transport in silicon crystal growth with continuous-feeding Czochralski method | Xi'an Jiaotong University |
| P17 | Jiancheng Li[1], Shanshan Tang[1], Chuanbo Chang[1,2], Changzhen Wang[1], Zaoyang Li[1], Lijun Liu[1] | Study on the thermal field uniformity in the cast monocrystalline silicon furnace | 1.Xi'an Jiaotong University<br>2.Golden Solar Silicon Industry Technologie (XuZhou) Co., Ltd. |

| | | | |
|---|---|---|---|
| P18 | Changzhen Wang[1], Jiancheng Li[1], Shanshan Tang[1], Chuanbo Chang[1,2], Zaoyang Li[1], Lijun Liu[1] | Control of the seed crystal melting interface for the growth of monocrystalline silicon ingots | 1.Xi'an Jiaotong University<br>2.Golden Solar Silicon Industry Technologie (XuZhou) Co., Ltd. |
| P19 | Yuqi Jin[1], Zaoyang Li[1], Jiancheng Li[1], Changzhen Wang[1], Zhongying Xue[2], Lijun Liu[1] | Numerical study of 12 inch silicon crystal growth by continuous-feeding Czochralski | 1.Xi'an Jiaotong University<br>2.Shanghai Institute of Microsystem and Information Technology |
| P20 | Wenjia Su, Zhen Zhang, Jiulong Li, Zhicheng Guan, Jiaqi Li | Numerical study on the effects of inner crucible window heights on the growth of single-crystalline silicon in a continuous Czochralski process | Jiangsu University |
| P21 | Chun-Hung Chen | Effects of CUSP magnetic field on heat and oxygen transport during continues-feeding CZ process | Xinxin Semiconductor (Group) Co., Ltd. |
| P22 | Wenkai Liu[1,2], Songsong Chen[1], Zhongying Xue[1], Xing Wei[1,3], Yuehui Yu[1] | Crystallization interface correction in simulation of Czochralski crystal growth with an asymmetric magnetic field | 1.Shanghai Institute of Microsystem and Information Technology<br>2.ShanghaiTech University<br>3.Zing Semiconductor Corporation |
| P23 | Chun-Hung Chen, Xiao-Xiao Liu | Effects of High-strength superconducting horizontal magnetic field on heat and flow transport by 3D simulation and experiments | Xinxin Semiconductor (Group) Co., Ltd. |
| P24 | Lei He, Fuchang Li, Zhaoyang Yan, Xiaofang Qi, Wencheng Ma, Jianli Chen, Yongkuan Xu, Zhanggui Hu | Thermal field design of resistance heated SiC crystal growth furnace by solution growth | Tianjin University of Technology |
| P25 | Yuzhe Bu[1,2], Qinglin Sai[1], Hongji Qi[1,3] | Stability of interfacial thermal balance in thick β-$Ga_2O_3$ crystal growth by EFG | 1.Shanghai Institute of Optics and Fine Mechanics<br>2.University of Chinese Academy of Sciences<br>3.Hangzhou Institute of Optics and |

| | | | |
|---|---|---|---|
| | | | Fine Mechanics |
| P26 | Qian Xia, Xuejiang Chen, Wensen Ai | Study on three-dimensional critical nucleation on a planar substrate of SiC crystal | Xi'an Jiaotong University |
| P27 | Zaoyang Li, Ruijing Shi, Xingyu Xu, Fan Zhu, Lijun Liu | Numerical study of die shape for the β-$Ga_2O_3$ crystal growth by EFG | Xi'an Jiaotong University |
| P28 | D. Shobana Priyanka[1], J. B. Sudharsan[2], M. Srinivasan[1], P. Ramasamy[1], M. K. Choudhary[3], P. Ravindran[3] | A new half metallic quaternary Heusler alloys for spin polarized device application and waste heat recovery treatment: Material computation | 1.SSN College of Engineering<br>2.Chennai Institute of Technology<br>3.Central University of Tamil Nadu |
| P29 | C. Elavarasi, S. Mugundan | Growth and Hirshfeld Surface Analysis of Imidazolium Fumarate (IMF) Single Crystal and DFT Computational Calculations for Third harmonic Generation | Sri Vijay Vidyalaya College of Arts and Science |
| P30 | K. Klinton Brito, D. Shobana Priyanka, M. Srinivasan, P. Ramasamy | The computational investigation of Co based quaternary Heusler alloys compatible for spin flip device and thermoelectric applications | SSN College of Engineering |
| P31 | T. Keerthivasan, M. Srinivasan, P. Ramaswamy | Numerical Investigation of Partial Replacement of Graphite Supporter to grow mc-Si on DS Furnace | SSN College of Engineering |
| P32 | Sugunraj Sekar, Aravindan Gurusamy, Srinivasan Manikkam, Ramasamy Perumalsamy | Modification of heat exchanger block to enhance the quality of mc-Si ingot grown by DS process for solar cell application | Sri Sivasubramaniya Nadar College of Engineering |
| P33 | M. Bharathwaj, S. Sugunraj, M. Srinivasan, P. Karuppasamy, P. Ramasamy | Numerical investigation of non-metal impurities on the DS grown mc-silicon ingot: Effect of argon flow rate | Sri Sivasubramaniya Nadar College of Engineering |
| P34 | Yuan Li[1], Xuejiang Chen[2], Wensen Ai[2] | Kinetic Monte Carlo simulation study of the early stages of epitaxial SiC (0001) growth | 1.Qinghai Minzu University<br>2.Xi'an Jiaotong University |
| P35 | Xin Wen[1], Nuofu Chen[1,3], Yu Zhang[1], | Effects of surface size and shape of polycrystalline powder on | 1.North China Electric Power |

| | | | |
|---|---|---|---|
| | Wenrui Hu[3,4], Jikun Chen[2] | the silicon carbide crystal growth by PVT method | University<br>2.University of Science and Technology Beijin<br>3.Yunnan Lincang Xinyuan Germanium Industry Co, Ltd.<br>4.Chinese Academy of Sciences |
| P36 | Qihang Li, Jinping Luo, Lijun Liu | Study on factors of large area graphene obtained by chemical vapor deposition | Xi'an Jiaotong University |
| P37 | Shaohua Du[1,2], Lijun Liu[2] | Numerical investigation of Polysilicon Particle Growth in a Fluidized Bed Reactor | Xi'an Jiaotong University |
| P38 | Xia Tang[2], Botao Liu[1], Yue Yu[1], Botao Song[1], Pengfei Han[1], Sheng Liu[1], Bing Gao[1] | Study on the spiral growth mechanism of gallium oxide by quantitative model | 1.Wuhan University<br>2.Leibniz institute for crystal growth |
| P39 | Junling Ding[1], Yuqing Li[1], Lijun Liu[2] | Effect of cusp magnetic field on the turbulent melt flow and heat transfer during 300mm Czochralski silicon crystal growth | 1.East China Jiaotong University<br>2.Xi'an Jiaotong University |
| P40 | Teng-Hui You, Xiang-Cao Li, Xin Ju | Study on coating exfoliation damage of KDP component under laser irradiation by surface analysis | University of Science and Technology Beijing |
| P41 | Jing Zhang, Ding Liu, Ruixin Lv, Xiaojun Chang | Study on Diameter Control of Czochralski Silicon in Shouldering | Xi'an University of Technology |
| 20:00-21:00 | **Int. Advisory committee meeting(online)** | | |

# Program (Wednesday, 19 October 2022)

| Session 9: Melt growth | | | |
|---|---|---|---|
| **Session Chair: Hui Zhang** | | | |
| **Session Co-Chair: Zhixin Li** | | | |
| Time (Beijing) | Authors | Title of Presentation | Affiliation |
| 8:10-8:30 | **Thierry Duffar**, Lingling Xuan | Modelling dopant valence in ionic crystal growth: the Ti:$Al_2O_3$ case **(Invited)** | Univ. Grenoble Alpes |
| 8:30-8:45 | **Zhixin Li**[1], Andrey Smirnov[2] | Computer modeling increases pulling rate and productivity of Czochralski pullers in PV Si crystal growth **(Invited)** | 1.Linton Technologies Group<br>2.STR Group - Soft Impact, Ltd. |
| 8:45-9:00 | Zaoyang Li[1], Liangyu Zhou[1], Niefeng Sun[2], Huimin Shao[2], Lijie Fu[2], Shujie Wang[2], Yue Wang[3], Lijun Liu[1] | Shielding of traveling magnetic field for the crystal growth with low electrical conductivity | 1.Xi'an Jiaotong University<br>2.Hebei Semiconductor Research Institute<br>3.Engreat Precision Machine Co. Ltd. |
| 9:00-9:15 | Pengfei Wang[1], Hui Zhang[2], Lili Zheng[2], Liangbi Su[1] | Process Control and Optimization of Large-Size $CaF_2$ Crystal Growth System | 1.Shanghai Institute of Ceramics, CAS<br>2.Tsinghua University |
| 9:15-9:30 | Hao Li, Zhong Zeng, Liangqi Zhang, Yue Wang, Yong Liu | The effect of Rotating Magnetic Field on thermocapillary liquid bridges between unequal ends | Chongqing University |
| 9:30-9:45 | Xiaofang Qi, Hang Yu, Wencheng Ma, Yongkuan Xu, Zhanggui Hu | Effect of internal radiation on thermal stress during Ti:sapphire crystal growth process by heat exchanger method | Tianjin University of Technology |
| 9:45-10:00 | Tai Li | Numerical simulation and experimental study of the effect of pulling rate on the shape of | Kunming University of Science and Technology |

| | | | |
|---|---|---|---|
| | | solid-liquid interfaces and silicon rod stresses during the growth of Czochralski single-crystal silicon | |
| 10:00-10:15 | **Coffee break** | | |
| **Session 10: Micro and meso scale simulation** | | | |
| **Session Chair: Chung-Wen Lan** | | | |
| **Session Co-Chair: Jinping Luo** | | | |
| Time (Beijing) | Authors | Title of Presentation | Affiliation |
| 10:15-10:35 | Jinping Luo[1], Chenyang Zhou[1], Yunjie Cheng[1], Qihang Li[1], Lijun Liu[1], Jack F. Douglas[2], **Talid Sinno**[3] | Impact of configurational entropy on point defect thermodynamics in silicon**(Invited)** | 1.Xi'an Jiaotong University<br>2.National Institute of Standards and Technology<br>3.University of Pennsylvania |
| 10:35-10:55 | **Yang Yang** | Kinetics of Crystallization and Orientational Ordering in Dipolar Particle Systems **(Invited)** | East China Normal University |
| 10:55-11:10 | Jinping Luo, Chenyang Zhou, Qihang Li, Lijun Liu | Atomic transport properties of silicon melt | Xi'an Jiaotong University |
| 11:10-11:25 | Thamanna Begum. K, Punithavelan. N, Srinivasan. M | Investigation of the structural, electronic, magnetic and thermoelectric properties of Semi Heusler alloys ZrMnX (X = As, Sb, Te): A DFT based simulation | 1.Vellore institute of technology<br>2.SSN college of engineering |
| 11:25-11:40 | Zun Liang, Yashen Wang, Xin Zhang, Wenliang Lu, Zhiyong Yu, Xiangming Ma, Hongtao Liang, Yang Yang | Understanding the solidification kinetic anisotropy via BCC crystal–melt interfaces | East China Normal University |
| 11:40-11:55 | Abdullah Alateeqi[1,2], Talid Sinno[1] | Computational Study of Silicon Non- | 1.University of Pennsylvania |

| | | | |
|---|---|---|---|
| | | Classical Homogeneous Nucleation | 2.Kuwait University |
| 11:55-12:10 | **Closing Ceremony, Lijun liu** | | |
| 12:10-14:00 | **Break** | | |
| 14:00 | **Visit LONGi** | | |
| 18:00 | **End of IWMCG-10** | | |