

Course Curriculum

2nd ICG-CGCRI Tutorial 2021

Through On-line Mode (MS Team)

18-23 and 25-27 January 2021 (09 days)



January 2021

**CSIR – Central Glass and Ceramic Research Institute
Kolkata, India**

Break down of each 60 Minutes Lecture Session

Introduction to the speaker: 5 min

Tutorial Lectures (Interactive Session): 45 min

Question and Answer: 10 min

Platform to be used: MS Teams

| Day 1 | 18 th January 2021 (Monday) | | | |
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| | | Instructor | Country and Affiliation | Date and Time (IST) Tentative |
| | Inaugural Program Introductory Remarks: Dr. Dipayan Sanyal, Chief Scientist & Chairman, ICG-CGCRI Tutorial Welcome address: Director, CGCRI: 10 min Address by Chief Guest : Prof. Dipankar Banerjee, Chairman, RC: 15 min Address by Guest of Honor: Prof. Alicia Duran, President International | | | 18.01.2021 3:50-4:50 PM |

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| | <p>Commission on Glass (ICG): 15 min</p> <p>Remarks on ICG-CGCRI Tutorial 2021: Prof. R. Conradt, Prof. J. M. Parker and Prof. Ana C M Rodrigues: 15 min</p> <p>Vote of thanks: Mr. Sitendu Mandal, Chief Scientist & Organizing Secretary, ICG-CGCRI-Tutorial 2021: 5 min</p> | | | |
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Break 10 min

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| | Student Introduction - I | | | 18.01.2021 5:00-6:00 PM |
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Break 10 min

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| | Student Introduction - II | | | 18.01.2021 6:10-7:10 PM |
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Break 10 min



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| 1. | Phase equilibria and chemical activities in glass melts | Prof. R. Conradt | UniglassA C GmbH, Aachen, Germany | 18.01.2021 7:20-8:20 PM |
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| Day 2 19 th January 2021 (Tuesday) | | | | |
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| | Interaction with students and allocation of Projects | Coordinator: Prof. J. M. Parker | Sheffield University, Sheffield, U.K. | 19.01.2021 3:50-5:00 PM |
| Break 10 min | | | | |
| 2. | Evolution of theories on glass structure | Alicia Duran | CSIC, Spain | 19.01.2021 5:00-6:00 PM |
| Break 10 min | | | | |
| 3. | Thermodynamics and energy demands for batch to melt conversion | Prof. R. Conradt | UniglassA C GmbH, Aachen, Germany | 19.01.2021 6:10-7:10 PM |
| Break 10 min | | | | |
| 4. | Heat Transfer Phenomena in Glass Melting Processes | Prof. M. K. Choudhary | MKC Innovations LLC and The Ohio State University, USA | 19.01.2020 7:20-8:20 PM |
| Day 3 20 th January 2021 (Wednesday) | | | | |
| 5. | Chemical Durability of Glass | Prof. R. Conradt | UniglassA C GmbH, Aachen, Germany | 20.01.2021 3:50-4:50 PM |

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| Break 10 min | | | | |
| 6. | Optical Properties of Glass; Glass color and redox chemistry (I) | Prof. J. M. Parker | Sheffield University, Sheffield, U.K. | 20.01.2021 5:00-6:00 PM |
| Break 10 min | | | | |
| 7. | Optical Properties of Glass; Glass color and redox chemistry (II) | Prof. J. M. Parker | Sheffield University, Sheffield, U.K. | 20.01.2021 6:10-7:10 PM |
| Break 10 min | | | | |
| 8. | Futuristic glasses | Prof. John Mauro | PSU, USA | 20.01.2021 7:20-8:20 PM |
| Day 4 | 21st January 2021 (Thursday) | | | |
| | Interaction with project students 3:50-4:50 PM | | | |
| 9. | Neutron and X-ray diffraction studies of glass | Prof. R. Vacher | University of Montpellier, France | 21.01.2021 5:00-6:00 PM |
| Coffee Break 10 min | | | | |
| 10. | Vibrations (I): basics of IR absorption, Brillouin and Raman scattering. | Prof. B. Hehlen | University of Montpellier, France | 21.01.2021 6:10-7:10 PM |
| Coffee Break 10 min | | | | |

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| 11. | Vibrations (II): relation with glass structure & properties | Prof. B. Hehlen | University of Montpellier, France | 21.01.2021 7:20-8:20 PM |
| Day 5 | 22nd January 2021 (Friday) | | | |
| 12. | NMR technique for evaluation of glass structure (I) | Prof. P. Florian | CEMHTI-CNRS, France | 22.01.2021 3:50-4:50 PM |
| Coffee Break 10 min | | | | |
| 13. | NMR technique for evaluation of glass structure (II) | Prof. P. Florian | CEMHTI-CNRS, France | 22.01.2021 5:00-6:00 PM |
| Break 10 min | | | | |
| 14. | Mechanical properties of glass | Prof. A. Varshneya | Saxon glass technologies, Alfred, USA | 22.01.2021 6:10-7:10 PM |
| Break 10 min | | | | |
| 15. | Glass Strengthening Techniques | Prof. A. Varshneya | Saxon glass technologies, Alfred, USA | 22.01.2021 7:20-8:20 PM |
| Day 6 | 23rd January 2021 (Saturday) | | | |
| Project Work | | | | 23.01.2021 |

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| | | | | 5.00-8.00 PM |
| Day 7 | 25th January 2021 (Monday) | | | |
| 16. | Nuclear waste vitrification and chemical durability | Prof. R. J. Hand | Sheffield University, UK | 25.01.2021 3:00-4:50 PM |
| Break 10 min | | | | |
| 17. | Modelling (I): Atomistic simulations | Prof. Akira Takada | Asahi Glass Yokohama - Japan | 25.01.2021 5:00-6:00 PM |
| Break 10 min | | | | |
| 18. | Glass-Ceramics (I): Fundamentals of Nucleation and crystallization | Prof. E. D. Zanotto | Federal University of São Carlos, São Carlos, Brazil | 25.01.2021 6:10-7:10 PM |
| Break 10 min | | | | |
| 19. | Glass-Ceramics (II): Advanced Applications | Prof. E. D. Zanotto | Federal University of São Carlos, São Carlos, Brazil | 25.01.2021 7:20-8:20 PM |
| Day 8 | 26th January 2021 (Tuesday) | | | |

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| 20. | Rare-earth doped glasses for photonic applications | Prof. S. Tanabe | Kyoto University, Japan | 26.01.2021 3:50-4:50 PM |
| Break 10 min | | | | |
| 21. | Modelling (II): Relation with structure and properties | Prof. Akira Takada | Asahi Glass Yokohama - Japan | 26.01.2021 5:00-6:00 PM |
| Break 10 min | | | | |
| 22. | Bioactive glass and glass-ceramic | A. R. Boccaccini | University of Erlangen-Nuremberg, Germany. | 26.01.2021 6:10-7:10 PM |
| Break 10 min | | | | |
| 23. | Ionic conductivity in Glasses | Ana C. M Rodrigues | Federal University of São Carlos, Brazil | 26.01.2021 7:20-8:20 PM |
| Day 9 | 27th January 2021 (Wednesday) | | | |
| Project Presentations | | | | 27.01.2021 |
| 15 min talk+10 min interaction = 25 min for 3 Groups | | | | 3:20-4:35 PM |
| Break 10 min | | | | |

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| Project Presentations 15 min talk+10 min interaction = 25 min for 3 Groups | 27.01.2021 4:45-6:00 PM |
| Break 10 min | |
| Career opportunities in glass research/questionnaires | 27.01.2021 6:10-7:10 PM |
| Break 10 min | |
| <i>Awards/Closing Ceremony</i> | 27.01.2021 7:20-8:20 PM |
| End..... | |