

**The 4<sup>th</sup> ICG Wuhan Winter School**  
**-The Workshop for New Researchers in Glass Science and**  
**Application**

**Glass Formation, Structure, and Properties**  
**&**  
**Glass for Nuclear Waste Immobilization**

# **Booklet**

**Wuhan University of Technology**  
**November 4-10, 2018, Wuhan, China**



# General Information

## The 4<sup>th</sup> Workshop for New Researchers in Glass Science and Applications (2018 ICG Wuhan Winter School)

**Date:** November 4<sup>th</sup>-10<sup>th</sup>, 2018

**Venue:** Conference Center, Mafangshan Campus, Wuhan University of Technology

**Hotel:** Vienna International Hotel (Wuhan Jiedaokou)

维也纳国际酒店武汉街道口店

Contact Tel: +86-027-8555 5888

### **Hotel address:**

Block A, Incubation Building, East campus, Wuhan University of Technology, 122#, Luoshi Road, Hongshan, Wuhan 430070, China

武汉市洪山区珞狮路 122 号武汉理工大学东院产业孵化大楼 A 座

### **Registration**

**Registration date:** November 4<sup>th</sup> (08:30- 22:00), 2018

**Registration Venue:** Lobby of the Vienna International Hotel (Wuhan Jiedaokou)

**Registration fee:** 3000 RMB (Normal fee)

1500 RMB (Reduced fee for students, show student ID at registration desk)

**Welcome reception:** November 5<sup>th</sup> (18:00), 2018

**Banquet:** November 8<sup>th</sup> (18:00), 2018

### **Contact point**

Prof. Kai Xu; Prof. Jihong Zhang

State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology

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E-mail: kaixu@whut.edu.cn; optinfo@whut.edu.cn

## **Registration and payment method:**

1. Send the registration form to [optinfo@whut.edu.cn](mailto:optinfo@whut.edu.cn) (Prof. Jihong Zhang) to complete your registration. Registration deadline: October 26<sup>th</sup>, 2018

There is number limit of participants, please finish the registration as soon as possible. Participants with some research experience are preferred.

2. Payment of registration fee

For international participants, it is better to pay the registration fee by cash or visa card on site.

For domestic participants, the registration fee can be paid by official business card on site or bank transfer.

账户名称：武汉珞珈会议服务有限公司

开户行：汉口银行武汉大学支行，账号：016010120110000522

纳税人识别号：91420111725753093D

汇款时请标注“硅酸盐冬令营+汇款单位+汇款人”字样，并通知张继红老师 ([optinfo@whut.edu.cn](mailto:optinfo@whut.edu.cn))。

## **Coverage of the registration fee:**

The fee includes coffee breaks, a welcome reception and a banquet.

## **Arrival:**

(1) When you arrive at Wuhan through flight, you can reach the Vienna International Hotel (Wuhan Jiedaokou) from Tianhe International Airport by (a) taxi, it takes ~130 RMB, (b) by subway Line 2.

(2) When you arrive at Wuhan Station through high speed railway, you can reach the Vienna International Hotel through subway (Line 4 from the Wuhan Station and transfer to Line 2, and take off at Jiedaokou Station)



**Vienna International Hotel**



**Conference Center**

Local Map of Jiedaokou and Appearance of the Hotel and Conference Center

# Scientific Program

**DAY 1: Nov. 4, 2018 (SUN)**

**Registration at the lobby of the Vienna International Hotel**

**DAY 2: Nov. 5, 2018 (MON)**

**Basic Glass Science & Nuclear Waste Glass**

Time	Lecture	Lecturer
8:00-8:30	Opening remarks and introduction to the course/ICG	Manoj Choudhary, John Parker, Shou Peng, Alicia Duran Reinhard Conradt
8:30-9:30	Glass formation and structure	Alicia Duran
9:30-10:00	Group Photo & Coffee Break	
10:00-11:00	Nuclear waste vitrification	Russell Hand (Sheffield)
11:00-12:00	Glass color and redox chemistry. Optical absorption and color coordinates.	John Parker (Sheffield)
12:00-14:00	Lunch	
14:00-17:00	<b>Basic glass science:</b> participants describe their own research activities (~5 min/student, ~10 min/researcher); <b>Nuclear waste glass:</b> participants describe their own research activities (~5min/student, ~10 min/researcher).	
17:00-18:00	Heat transfer in glass melting and delivery process	Manoj Choudhary
18:00-	Welcome Reception	

**DAY 3: Nov. 6, 2018 (TUE)**

**Basic Glass Science**

Time	Lecture	Lecturer
8:00-9:00	Glass transition	Yuanzheng Yue (Aalborg and Wuhan)
9:00-10:00	Ion exchange, diffusion profiles, particle growth. Mechanical and optical properties	John Parker (Sheffield)
10:00-10:15	Coffee Break	
10:15-11:15	Structure: Neutron and X-ray diffraction	Rene Vacher (Montpellier)
11:15-12:15	NMR in silicate glass	Jinjun Ren (CAS)
12:15-14:00	Lunch Break	
14:00-17:00	Project assignments & start project workshops	
17:00-18:00	Positron insight on the ion-induced	Taras Kavetsky (Ukraine)

	processes in polymer and glass nanocomposite materials	
18:00-	Dinner	

### **Nuclear Waste Glass**

Time	Lecture	Lecturer
8:00-9:00	International experience in radioactive waste glasses	Michael Ojovan (Imperial College London, IAEA)
9:00-10:00	Nuclear waste vitrification: Focus on French experience	Olivier Pinet (CEA, France)
10:00-10:15	Coffee Break	
10:15-11:15	U.S. defense nuclear waste glass formulation and production	Kevin Fox (SRNL, USA)
11:15-12:15	Brief review of HLW immobilization research and development and the related statistical modelling approach to composition-structure-property relationships: Part I	Hong Li (NEG-US)
12:15-14:00	Lunch Break	
14:00-17:00	Project assignments & start project workshops & round-table discussion	
17:00-18:00	Fusion cast refractories: roles of containment	Kevin Selkregg (Monofrax)
18:00-	Dinner	

### **DAY 4: Nov. 7, 2018 (WED)**

#### **Basic Glass Science**

Time	Lecture	Lecturer
8:00-9:00	Modelling I: atomistic simulations	Akira Takada (AGC)
9:00-10:00	Materials innovation through modeling & simulation	Manoj Choudhary
10:00-10:15	Coffee Break	
10:15-11:15	Modelling II: bringing between macroscopic and microscopic phenomena	Akira Takada (AGC)
11:15-12:15	The activation energy of viscous flow of glasses and melts	Michael Ojovan (Imperial College London, IAEA)
12:15-14:00	Lunch Break	
14:00-18:00	Tutorials & project workshops	
18:00-	Dinner	

#### **Nuclear Waste Glass**

Time	Lecture	Lecturer
8:00-9:00	Brief review of HLW immobilization	Hong Li (NEG-US)

	research and development and the related statistical modelling approach to composition-structure-property relationships: Part II	
9:00-10:00	Chemical durability of nuclear waste glass	Russell Hand (Sheffield)
10:00-10:15	Coffee Break	
10:15-11:15	Experiment investigation and mathematical modeling of batch-to-glass conversion during cold top waste glass melting	Richard Pokorny (Czech Republic)
11:15-12:15	TBA	TBA
12:15-14:00	Lunch Break	
14:00-18:00	Tutorials & project workshops	
18:00-	Dinner	

#### **DAY 5: Nov. 8, 2018 (THU)**

##### **Basic Glass Science & Nuclear Waste Glass**

Time	Lecture	Lecturer
8:00-9:00	Thermodynamics of glasses I - One-component and multi-component glasses	Reinhard Conradt (Aachen)
9:00-10:00	Vibration I: basics of IR absorption, Brillouin and Raman scattering	Bernard Hehlen (Montpellier)
10:00-10:15	Coffee Break	
10:15-11:15	Thermodynamics of glasses II - Examples: Glass melting, emission problems, chemical durability	Reinhard Conradt (Aachen)
11:15-12:15	Vibration II: relation with glass structure and properties	Bernard Hehlen (Montpellier)
12:15-14:00	Lunch Break	
14:00-18:00	Project workshops	
18:00-	Banquet	

#### **DAY 6: Nov. 9, 2018 (FRI)**

Time	Lectures
08:45-12:00	Student presentation of projects
12:00-	Conference close

#### **DAY 7: Nov. 10, 2018 (SAT)**

Leaving