



FunGlass
centre for functional and
surface functionalized glass

FunGlass – Centre for Functional and Surface Functionalized Glass



TREŇČIANSKA UNIVERZITA
ALEXANDRA DUBČEKA V TREŇČINE

INVITATION

Science Webinars

“LECTURES ON SINTERING”

“SINTERING: DENSIFICATION, GRAIN GROWTH AND MICROSTRUCTURE”

BY

SUK-JOONG L. KANG

FunGlass, April 15 – May 15, 2024

PLACE: Conference room B 4.03 FunGlass TNUAD and online

These events are organized as a part of the Visiting Scientist programme under the Horizon 2020 project “FunGlass” - grant agreement N°739566:

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Alexander Dubček University of Trenčín



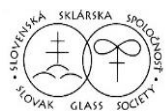
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Research Interest:

- Grain growth and microstructural evolution in polycrystals with change in interface structure and chemistry
- Theory and Practice of Sintering – microstructure control and related physical properties

Supporting partners



Dissemination partners

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PROGRAM

DATE	TIME (CET)	LECTURE
April 17, Wednesday	2:00 p.m. – 4:00 p.m.	Basis of Sintering Science I.
April 19, Friday	10:00 a.m. – 12:00 p.m.	Basis of Sintering Science II.
April 26, Friday	10:00 a.m. – 12:00 p.m.	Bonding and Densification I.
April 29, Monday	2:00 p.m. – 4:00 p.m.	Bonding and Densification II.
April 30, Tuesday	2:00 p.m. – 4:00 p.m.	Grain Growth and Microstructural Evolution I.
May 6, Monday	2:00 p.m. – 4:00 p.m.	Grain Growth and Microstructural Evolution II.
May 7, Tuesday	2:00 p.m. – 4:00 p.m.	Supplementary subjects I.
May 13, Monday	2:00 p.m. – 4:00 p.m.	Supplementary subjects II.



This course is part of a project that has received funding from the **European Union's Horizon 2020 research and innovation programme** under grant agreement N°739566



MAIN SEQUENCE / CONTENT OF LECTURES:

Part I. *Basis of Sintering Science*

- Brief description of sintering processes and their parameters
- Interfacial energy and driving force of sintering
- Sintering and polycrystalline microstructure

Part II. *Bonding and Densification*

- **Solid state sintering (SSS) Models and Densification**
 - Models and kinetics
 - Effects of processing variables
- **Liquid phase sintering (LPS) Models and Densification**
 - Role of liquid in densification
 - Densification kinetics (effects of processing variables)

Part III. *Grain Growth and Microstructural Evolution*

- **Liquid phase sintering**
 - Grain growth in a matrix (Ostwald ripening)
 - Effect of interfacial energy anisotropy
- **Solid state sintering**
 - Grain growth in a pure and dense system
 - Effects of second phase particles and solute segregation
 - Effect of pores on microstructure development
 - Effect of boundary energy anisotropy

Part IV. *Supplementary subjects*

- Sintering of ionic compounds
- Diffusion induced grain-boundary migration
- Discussion on potential strategies for full densification

