

Hokkaido University-LeNet International Symposium
Low Entropy Soft Matter

PROGRAM

February 12-14, 2025



Soft Matter Collaborative Research Unit (SMCR)
Frontier Research Center for Advanced Material and Life Science
Faculty of Advanced Life Science, Hokkaido University
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Background & Scope

JSPS international leading research project "Design of Low Entropy Polymer Network Materials for Unique Functions", which is a collaborative project between Japan, U.S., and EU teams, focuses on low entropy polymer networks (LeNet) that realize unique mechanical properties and functions derived from their low-entropy structures. This international symposium aims to discuss the interest, potential, and future of low-entropy polymer networks from various aspects through the progress reports by the project participants and the invited lectures by distinguished polymer researchers.

Date and Time

February 12(Wed) 9:30 - 14(Fri)14:30, 2025

Venue

〒060-0808 Hokkaido University Conference Hall,
Kita 8-jo Nishi 5-chome 8-1, Kita-ku, Sapporo, Hokkaido

Meeting-at-a-Glance



Lenet International Symposium

Low Entropy Soft Matter

DAY 1

| Date | Wednesday, February 12, 2025 | |
|---------------|--|---|
| Location | Conference Room, Hokkaido University Conference Hall (2F) | |
| 9:00~ | Registration | Chair : Dr. Takayuki Nonoyama |
| 9:30 - 9:45 | Opening Remarks Dr. Jian Ping Gong Hokkaido University | |
| 9:45 - 10:30 | Use of spiropyran mechanophores to detect molecular forces in nanocomposite elastomers Dr. Costantino Creton ESPCI Paris-PSL | |
| 10:30 - 11:00 | Ratiometric force imaging for soft materials Dr. Shohei Saito Osaka University | |
| 11:00 - 11:30 | Ladder Polymers as Low Entropy Polymers Dr. Fumitaka Ishiwari Osaka University | |
| 11:30- 13:00 | Lunch Break | |
| 13:00 - 13:45 | Model Transient Polymer Networks: From their Composition to their Viscoelastic Properties Dr. Evelyne Van Ruymbeke Université catholique de Louvain | Chair : Dr. Jian Ping Gong |
| 13:45 - 14:15 | Bond exchange-induced unusual structural and rheological properties of vitrimer-like materials with phase-separated network Dr. Mikihiro Hayashi Nagoya Institute of Technology | |
| 14:15- 14:45 | Coffee Break | |
| 14:45 - 15:15 | Stretch-induced Ordered Structures in Gels Dr. Xiang Li Hokkaido University | Chair : Dr. Tsutomu Indei |
| 15:15 - 15:45 | Entropic and Energetic Elasticity in Rubber-like Gels Dr. Naoyuki Sakumichi The University of Tokyo | |
| 15:45 - 16:30 | Functionalization of polymer materials utilizing rigid and flexible multiple hydrogen bonds Dr. Naoko Yoshie The University of Tokyo | |
| 17:00 - 18:30 | Welcome party | |

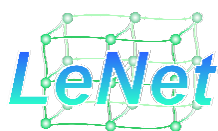


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Low Entropy Soft Matter

DAY2

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| Date | Thursday, February 13, 2025 | |
| Location | Conference Room, Hokkaido University Conference Hall (2F) | |
| 【ICReDD Session】 | | Chair : Dr. Takayuki Kurokawa |
| 9:30 - 10:00 | Reorganization of entangled DNA networks due to competition between condensin complexes and linker histones Dr. Tetsuya Yamamoto Hokkaido University | |
| 10:00 - 10:20 | Biomimetic Approaches via Mechanochemical Growth in DN Gels Dr. Gumi Wei Hokkaido University | |
| 10:20 - 10:40 | Mechanically strengthening and morphogenesis of double network hydrogels via force-induced bond breaking and formation Dr. Zhijian Wang Hokkaido University | |
| 10:40 - 11:10 | Unique chemical and mechanical behaviors of ultimately deformed polymer networks Dr. Tasuku Nakajima Hokkaido University | |
| 11:10 - 11:25 | Photo shoot | |
| 11:25- 13:15 | Lunch Break | |
| 13:15 - 14:00 | Functional polymer gel for decomposing organophosphates and removal of heavy metals, toxins, and orthophosphates Dr. Jan Genzer NC State University | Chair : Dr. Tasuku Nakajima |
| 14:00 - 14:30 | Mineralization in Double Network Hydrogel to Visualize Polymer Network and to Regulate Mineral Formation Dr. Takayuki Nonoyama Hokkaido University | |
| 14:30 - 15:00 | Towards frontiers in dynamic light scattering Dr. Takashi Hiroi Shibaura Institute of Technology | |
| 【Poster Session】 | | |
| 15:00- 17:00 | Poster Session / Coffee Break | |
| 19:00 - 21:00 | Banquet | |



Lenet International Symposium

Low Entropy Soft Matter

DAY3

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|-----------------|--|---|
| Date | Friday, February 14, 2025 | |
| Location | Conference Room, Hokkaido University Conference Hall (2F) | |
| 9:30 - 10:15 | Nonlinear and Fracture Mechanics of Soft Polymer Networks: Insights From Strain Crystallizing to Liquid Crystal Elastomers Dr. Kenji Urayama Kyoto University | Chair : Dr. Xiang Li |
| 10:15 - 10:45 | Tough Polymer Gels Reinforced by Strain-Induced Crystallization Dr. Koichi Mayumi The University of Tokyo | |
| 10:45 - 11:15 | “Force fingerprints” of single polymer chain observed by stretching macroscopic polymer network Dr. Tsutomu Indei Hokkaido University | |
| 11:15- 12:45 | Lunch Break | |
| 12:45 - 13:00 | Soft matter lab tour video | Chair : Dr. Takayuki Nonoyama |
| 13:00 - 13:30 | In-situ Evaluation of the Polymer Concentration Distribution of Polyelectrolyte Hydrogels by Microelectrode Technique Dr. Takayuki Kurokawa Hokkaido University | |
| 13:30 - 14:15 | Gel-gel phase separation –Interplay between osmotic and elastic pressures– Dr. Takamasa Sakai The University of Tokyo | |
| 14:15 - 14:30 | Closing Remarks / Poster Awards | |