KULJEET KAUR

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RESEARCH INTERESTS

Organic and supramolecular chemistry, peptides, polymers, material science

EDUCATION

Virginia Tech, Blacksburg, VA, USA, Ph.D., Chemistry, (2015-2019).
Thesis: *Synthesis, Evaluation, and Applications of Hydrogen Sulfide-Releasing Supramolecular Materials.*
Advisor: John B. Matson.

Guru Nanak Dev University, Punjab, India. M.Sc.(Hons.), Chemistry, (2008-2010).
Thesis: *The Design, Synthesis, and Evaluation of Napthaqinone based Chemosensors.*
Advisor: Subodh Kumar.

Guru Nanak Dev University, Punjab, India. B.Sc.(Hons.), Chemistry, (gold medal) (2005-2008).

PROFESSIONAL EXPERIENCE

École polytechnique fédérale de Lausanne (EPFL), Lausanne, Switzerland.
NCCR-WINS Postdoctoral Fellow, Material Science and Engineering, (2020-2022).
Hosted by: Harm-Anton Klok

Jubilant Biosys Ltd., Noida, India, Research Associate (Organic R & D), (2010-2014).

JOURNAL PUBLICATIONS

- **K. Kaur**, H.-A. Klok,"Modulating the swelling behavior in polymer brushes by tuning interfacial hydrophilicity", *Under preparation.*
- S. Thiele, **K. Kaur**, H.-A. Klok, "Photoactivated surface-initiated O-ATRP using a phenoxazine dye", *Under preparation.*
- F. K. Metze, S. Sant, Z. Meng, H.-A. Klok*, and **K. Kaur***, "Swelling-Activated Soft Mechanochemistry in Polymer Materials", *Langmuir*, 39, **2023**, 3546-3557.
- Z. Wang, F. Rong, Z. Li, W. Li, **K. Kaur**, Y. Wang*, "Tailoring gas-releasing nanoplatforms for wound treatment: An emerging approach", *J. Chem. Eng.*, 452, **2022**, 139297.
- C. A. Stevens, **K. Kaur**, and H.-A. Klok*, "Self-assembly of protein-polymer conjugates for drug delivery" *Adv. Drug Deliv. Rev.*, **2021**, 174, 447-460.
- **K. Kaur**, P. Enders, Z. Yumeng, A.F. Bratton, C. R. Powell, K. Kashfi*, and J. B. Matson*, "Amino acid-based H_2S donors: *N*-thiocarboxyanhydrides that release H_2S with innocuous byproducts" *Chem. Commun.*, **2021**, 57, 5522-5525.
- **K. Kaur**, Y. Wang, and J. B. Matson*, "Linker regulated H_2S release from aromatic peptide amphiphile hydrogels" *Biomacromolecules*, **2020**, 21, 1171-1178.
- **K. Kaur**, R. J. Carrazzone, and J. B. Matson*, "The benefits of macromolecular/supramolecular approaches in H_2S delivery: A review of polymeric and self-assembled H_2S donors" *Antioxid. Redox Signal.*, **2020**, 32, 79-95.

- A. Longchamp, **K. Kaur**, D. Macabrey, C. Dubuis, J. M. Corpataux, S. Déglise, J. B. Matson*, and F. Allagnat*, "Hydrogen sulfide-releasing peptide hydrogel limits the development of intimal hyperplasia in human vein segments" *Acta Biomater.*, **2019**, 97, 374-384.
- C. R. Powel, **K. Kaur**, M. Zhou, M. Alaboalirat, and J. B. Matson*, "Functional *N*-substituted *N*-thiocarboxyanhydrides as modular tools for constructing H_2S/COS donor conjugates" *A*CS Chem. Bio., **2019**, 14, 1129-1134.
- C. R. Powel, J. C. Foster, S. Swilley, **K. Kaur**, D. Troya, and J. B. Matson*, "Self-Amplified Depolymerization of Oligo(thiourethanes) for the Release of COS/H_2S" *Polym. Chem.*, **2019**, 10, 2991-2995.
- Y. Qian, **K. Kaur**, J. C. Foster, and J. B. Matson*, "Supramolecular tuning of H_2S release from aromatic peptide amphiphile gels: Effect of core unit substituents" *Biomacromolecules*, **2019**, 20, 1077-1086.
- **K. Kaur**, Y. Qian, R. D. Gandour, and J. B. Matson*, "Hydrolytic decomposition of *S*-aroylthiooximes: Effect of pH and *N*-arylidene substitution on reaction rate" *J. Org. Chem.*, **2018**, 83, 13363-13369.
- Y. Wang, **K. Kaur**, S.J. Scannelli, R. Bitton, and J. B. Matson*, "Self-assembled nanostructures regulate H_2S release from constitutionally isomeric peptides" *J. Am. Chem. Soc.*, **2018**, 140, 14945-14951.

BOOK CHAPTERS

- **K. Kaur**, Y. Qian, and J. B. Matson*, "H_2S delivery from aromatic peptide amphiphile hydrogels" *Biomaterials in Tissue Engineering: Methods and Protocols., Humana Press, New York, NY,* **2018**, 1758, 193-208.

PRESENTATIONS

Invited Talks

- Swiss Nanoconvention 2022, "Swelling-induced effects in polymer brushes", Fribourg, Switzerland, 05 July, **2022**.
- 13th Hellenic Polymer Society International Conference, "Polymer brush swelling and the role of interfacial phenomena", Athens, Greece, 16 December, **2021**.*(online)*
- Indian Institute of Science, "Understanding interfacial properties of surface-grafted polymer assemblies", Bangalore, India, 17 November, **2021**.*(online)*
- École Polytechnique Fédérale De Lausanne (EPFL), "Peptide-based materials for gasotransmitter delivery", Lausanne, Switzerland, 27 May, **2019**.

Talks

- 263rd American Chemical Society National Meeting,"Polymer brush swelling and the role of interfacial phenomena", San Diego, USA, 20 March, **2022**.*(online)*
- PacificChem International Chemical Conference, "Investigation of degrafting phenomenon in polymer brushes by fine-tuning interfacial properties", Hawaii, USA, 19 December, **2021**.*(online)*
- 254th American Chemical Society National Meeting, "Stability and self-assembly of H_2S releasing peptide hydrogels", Washington D.C., 24 August, **2017**.

Posters

- International Course on Macromolecular Science for Advanced and Sustainable Materials, "Engineering polymer brush interfaces", Erice, Italy, 10 July, **2022**.

- NCCR Annual Center Conference (ACC), "Polymer brush swelling and the importance of interfacial phenomenon", Charmey, Switzerland, 7 September, **2021**.
- Gordon Research Conference, "Peptide-H_2S donor conjugates: Role of the liker segment in self-assembly and hydrogelation", Les Diablerets, Switzerland, 19 May, **2019**.
- Gordon Research Seminars, "Constitutionally isomeric peptide-H_2S donor conjugates: A sequence specific control of self-assembly", Les Diablerets, Switzerland, 21 May, **2019**.
- Virginia Drug Discovery Rx: Symposium on academic-industrial partnerships, "Development of peptide hydrogels for local H_2S delivery", Arlington, Virginia, 25 June, **2018**.
- 12th National Graduate Research in Polymer Conference, "Controlled H_2S release from supramolecular peptide hydrogels", Akron, Ohio, 21 June, **2016**.

FELLOWSHIPS AND AWARDS

- Women in Science (WINS) Postdoctoral Fellowship funded by Swiss National Science Foundation (SNSF)-National Centres of Competence in Research(NCCR), (2020-2022)
- Graduate School Doctoral Assistantship award, Department of Chemistry, Virginia Tech, 2019.
- Annual award for contributions to a project on anti-bacterial benzothiazoles, Jubilant Chemsys Ltd. 2011.

PROFESSIONAL SERVICE

-Reviewer for Soft Matter, Journal of Materials Chemistry B, and Biomacromolecules
-Session co-chair of Division of Polymer, Colloids and Interfaces (DPCI) symposia in Swiss Chemical Society (SCS) Fall Meeting, September, 2021
-Co-organizer of Swiss Soft Days (SSD) Meeting, EPFL, October, 2021

TEACHING EXPERIENCE

Teaching Assistant

- CHEM 1046 - General chemistry II, Department of Chemistry, Virginia Tech, Spring 2015 and 2016.
- CHEM 1045 - General chemistry I, Department of Chemistry, Virginia Tech, Fall 2015 and 2016.
- CHEM 2546 - Organic chemistry, Department of Chemistry, Virginia Tech, Spring 2017.
- MSE 437 - Polymer chemistry and macromolecular engineering, School of Engineering, Institute of Materials (STI-IMX) EPFL, Fall 2020 and Fall 2021.