Ali Miserez
School of Materials Science & Engineering
Email: ali.miserez@ntu.edu.sg

Employment

Professor
School of Materials Science & Engineering
Nanyang Technological University
Jan 1 2000 → present

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Biography

Ali Miserez is a Faculty member in the School of Materials Science and Engineering and the School of Biological Sciences at Nanyang Technological University (NTU) in Singapore. He graduated from the Ecole Polytechnique Fédérale de Lausanne (EPFL, Switzerland) with a PhD in Materials Science and Engineering (2003) and a specialization in advanced metal/ceramic composites and mechanics of materials. In 2004, he received a Swiss National Science Foundation post-doc fellowship and moved to the University of California, Santa Barbara (UCSB), where he was affiliated with the Materials Department and the Marine Science Institute. At UCSB, he expanded his research interest towards biological materials and biomimetics working in the group of Prof. Herb Waite. In 2009, he moved to NTU as an Assistant Professor, and in 2011 he was awarded the Singapore National Research Foundation (NRF) Fellowship, a $3 Million individual research grant for early career scientists. Dr. Miserez's research is centered on revealing the molecular, physico-chemical, and structural principles from unique biological materials, and on translating these designs into novel biomimetic synthesis strategies. His research group is strongly cross-disciplinary, with molecular biologists, chemists, bio-physicists, and materials scientists combining their expertise towards bioinspired engineering from various angles, including protein biochemistry, extra-cellular tissue transcriptomic, polymer chemistry, biomimetic peptide design, biophysics, and nanomechanics. In recent years, his work has appeared in both general (Science, Nature Materials, Nature Biotechnology, Nature Chemical Biology, Advanced Materials) and specialized journals (Biomacromolecules, ACS Nano, JBC, Polymer Chemistry, etc,). He has delivered numerous invited talks, including at various Gordon Research Conferences in the field of bioinspired materials and biomineralization.

Award
Young Scientist Award

Research outputs

Wu, X., Sun, Y., Yu, J., & Miserez, A. (2024). Tuning the viscoelastic properties of peptide coacervates by single amino acid mutations and salt kosmotropicity. *Communications Chemistry*, *7*(1), Article 5. https://doi.org/10.1038/s42004-023-01094-y

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Prizes

Press/Media

Advancing water treatment for a sustainable future
Ali Miserez & Stefan Wuertz
4/17/23
1 item of Media coverage

Barnacle proteins protect metals from corrosion in salt water
Ali Miserez
3/5/24
1 item of Media coverage

Decontaminating heavy metal water using protein from plant waste
Ali Miserez
6/23/22
1 item of Media coverage

Decontaminating heavy metal water using protein from plant waste
Ali Miserez
6/23/22
4 items of Media coverage

Filtering Poisons With Seeds
Ali Miserez
8/3/22
1 item of Media coverage

Investigators at Nanyang Technological University Describe Findings in Chemicals and Chemistry (Trifluoroacetic Acid As a Molecular Probe for the Dense Phase In Liquid-liquid Phase-separating Peptide Systems)
Ali Miserez
1/17/25
1 item of Media coverage

Low-cost filters use plant waste to remove heavy metals from water
Ali Miserez
6/28/22
1 item of Media coverage

McGill University: Study of Velvet Worm Slime Could Revolutionize Sustainable Material Design
Ali Miserez
3/21/25

1 item of Media coverage

Nanyang Technological University Researchers Highlight Research in Chemicals and Chemistry (Tuning the viscoelastic properties of peptide coacervates by single amino acid mutations and salt kosmotropicity)
Ali Miserez
1/19/24
1 item of Media coverage

Nanyang Technological University Researchers Illuminate Research in Drug Delivery Systems (pH-dependent interactions of coacervate-forming histidine-rich peptide with model lipid membranes)
Ali Miserez
2/1/24
1 item of Media coverage

News Sneaking Drugs Into Cells Using a Protein-Based Microdroplet System A team has developed a new way to deliver drugs into cells using large biological molecules, by enclosing them in a protein-based microdroplet.
Ali Miserez
3/17/22
2 items of Media coverage

Novel 'Trojan horse' drug delivery system using protein-based microdroplets
Ali Miserez
3/16/22
1 item of Media coverage

Novel 'Trojan horse' drug delivery system using protein-based microdroplets
Ali Miserez
3/16/22
4 items of Media coverage

NT/ Lipid nanoparticles carry gene-editing cancer drugs past tumor defenses
Ali Miserez
7/12/22
1 item of Media coverage

NTU scientists a step closer to using velvet worm's slime as bioplastic; They have uncovered the exact constitution of proteins in the sticky slime squirted to nab prey
Ali Miserez
6/20/22
1 item of Media coverage

NTU Singapore and ETH Zurich scientists convert waste chicken feathers into fuel cell membrane
Ali Miserez
10/22/23
1 item of Media coverage

NTU Singapore and ETH Zurich scientists convert waste chicken feathers into the heart of clean fuel cells
Ali Miserez
10/20/23
1 item of Media coverage

NTU Singapore and ETH Zurich scientists convert waste chicken feathers into the heart of clean fuel cells
Ali Miserez
10/21/23
1 item of Media coverage

NTU Singapore and ETH Zurich scientists convert waste chicken feathers into the heart of clean fuel cells
Ali Miserez
10/20/23
2 items of Media coverage

NTU Singapore and ETH Zurich scientists decontaminate heavy metal water using protein from plant waste
Ali Miserez
6/23/22
2 items of Media coverage

NTU Singapore And ETH Zurich Scientists Decontaminate Heavy Metal Water Using Protein From Plant Waste
Ali Miserez
6/27/22
1 item of Media coverage

NTU team develops ‘trojan horse’ drug delivery system
Ali Miserez
3/17/22
4 items of Media coverage

Plant Waste can Filter Heavy Metals from Water, Study Shows
Ali Miserez
7/4/22
1 item of Media coverage

Plucking power from poultry with feather fuel cells
Ali Miserez
11/21/23
1 item of Media coverage

Powering clean energy with chicken feathers
Ali Miserez
10/20/23
2 items of Media coverage

Powering clean energy with chicken feathers
Ali Miserez
10/20/23
1 item of Media coverage

Recent Findings in Materials Research Described by Researchers from Nanyang Technological University (Barnacle cement protein as an efficient bioinspired corrosion inhibitor)
Ali Miserez & Richard David Webster
3/20/24
1 item of Media coverage

Researchers decontaminate heavy metal water using protein from plant waste
Ali Miserez
6/30/22
1 item of Media coverage

Researchers develop novel "Trojan horse" drug delivery system using protein-based microdroplets
Ali Miserez
3/19/22
1 item of Media coverage

Researchers develop novel “Trojan horse” drug delivery system using protein-based microdroplets
Ali Miserez
3/19/22
1 item of Media coverage

Scientists Convert Waste Chicken Feathers Into The Heart Of Clean Fuel Cells
Ali Miserez
10/23/23
1 item of Media coverage

Scientists Convert Waste Chicken Feathers Into The Heart Of Clean Fuel Cells
Ali Miserez
10/22/23
1 item of Media coverage

Scientists decontaminate heavy metal water using protein from plant waste
Ali Miserez
6/24/22
1 item of Media coverage

Seminar: Stimuli-Responsive Peptide Coacervates as Universal Carriers for Intracellular Delivery of Macromolecular Therapeutics
Ali Miserez
7/11/22
1 item of Media coverage

Study of velvet worm slime could revolutionize sustainable material design
Ali Miserez
3/19/25
2 items of Media coverage

Study of velvet worm slime could revolutionize sustainable material design
Ali Miserez
3/19/25
1 item of Media coverage

Study of velvet worm slime could revolutionize sustainable material design
Ali Miserez
5/6/25
1 item of Media coverage

STUDY OF VELVET WORM SLIME COULD REVOLUTIONIZE SUSTAINABLE MATERIAL DESIGN
Ali Miserez
3/19/25
1 item of Media coverage

Suspected new species found in S'pore
Ali Miserez
6/20/22
1 item of Media coverage

The key to sustainable energy may lie… in chickens!
Ali Miserez
10/20/23
1 item of Media coverage

'Trojan Horse' drug delivery system developed
Ali Miserez
4/4/22
1 item of Media coverage

Vegetable oil byproduct can filter heavy metals from water
Ali Miserez
6/28/22
1 item of Media coverage

Velvet Worms' Deadly Projectile Slime Unleashes Surprising Protein Discovery
Ali Miserez
3/19/25
1 item of Media coverage

Velvet worm’s slime could hold the key for sustainable biodegradable bioplastics
Ali Miserez
6/27/22
1 item of Media coverage

Waste Product Water Filters - These Oilseed Meal Water Filters Capture Heavy Metals from Water
Ali Miserez
6/28/22
1 item of Media coverage

Awards

Hard Proteinaceous-Based Jaws as Biomimetic Inspiration for the Design of Lightweight Abrasive-Resistant Materials
Ali Miserez (PI)
Schweizerischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung
9/1/06 → 8/31/07

Projects

ACCEL
Ali Miserez (PI), Ferland, M.-E.M.-E. (PI) & Rantavuori, J. J. (PI)
Schweizerischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung
9/1/06 → 9/30/20

FRONTIERS IN PHYSICAL AND LIFE SCIENCES: BIO-INSPIRED AND BIOMIMETIC MATERIALS
Ali Miserez (PI)
6/12/11 → 6/11/16

Matériaux biomimétiques - Etude par nanoindentation des propriétés structurelles et abrasives de biocomposites naturels: les machoires d'invertébrés marins
Ali Miserez (PI)
Schweizerischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung
5/1/04 → 4/30/05

NICOP - Molecular Mechanisms of Barnacle Adhesion: A Combined Structural Biology and Computational Study
Ali Miserez (PI)
2/20/17 → …

Datasets

Data for: Harnessing Gradients for Self-Assembly of Peptide-Based Nanocapsules: A Pathway to Advanced Drug Delivery Systems

Li, H. (Creator), Qian, X. (Creator), Mohanram, H. (Creator), Han, X. (Creator), Qi, H. (Creator), Zou, G. (Creator), Yuan, F. (Creator), Miserez, A. (Creator), Yang, Q. (Creator), Liu, T. (Creator), Gao, H. (Creator), Yu, J. (Creator) & Li, H. (Contributor), DR-NTU (Data), 2023
DOI: 10.21979/n9/djv2bm, https://researchdata.ntu.edu.sg/citation?persistentId=doi:10.21979/N9/DJV2BM