



UNIVERSITY  
OF TRENTO - Italy

Department of Industrial Engineering  
Department of Civil, Environmental and  
Mechanical Engineering

## Frontiers in Silk Sciences and Technologies

Trento Innovation Conferences on Materials Engineering 2019

12-15 June 2019

Castello del Buonconsiglio - Sala Marangonerie

FINAL PROGRAMME



**Wednesday 12 June**

13.00-16.00	Registration of participants and poster display	
16.00-16.20	<b>Antonella Motta, Nicola Pugno, Chris Holland</b> Greetings and introduction of guests	University of Trento, University of Sheffield
16.20-16.30	<b>Paolo Collini</b> <i>Greetings from the Dean</i>	University of Trento - Italy
16.30-17.00	<b>Luisella Pavan-Woolfe</b> <i>The European Silk Route: a European cultural route project</i>	Council of Europe
17.00-17.30	<b>Tiziana Lippiello</b> <i>Silk Roads from Venice to South Korea</i>	University of Venice - Italy
Chair: Antonella Motta and Nicola Pugno		
17.30-18.30	<b>Opening lecture:</b>  <b>David Kaplan</b> <i>New advances in engineering silk biomaterials</i>	TUFTS University - USA
18.30-19.00	Poster session	
19.00-20.00	Welcome buffet	

**Thursday 13 June**

Chair: Anna Rising and Nuno Neves		
9.00-9.20	<b>Hyoung-Joon Jin</b> <i>Physical properties of carbonized silk fiber and its applications</i>	Inha University - South Korea
9.20-9.40	<b>Jan Rainey</b> <i>Applying molecular structure and dynamics to understand aciniform silk fibrillogenesis.</i>	Dalhousie University - Canada
9.40-10.00	<b>Kazuharu Arakawa</b> <i>Sequencing 1,000 spiders to elucidate the design mechanisms of spider silk proteins</i>	Keio University -Japan
10.00-10.20	<b>Russell Stewart</b> <i>How nature does polymer chemistry: duplication and shuffling of structural motifs in caddisworm silk H-fibroins</i>	University of Utah - USA
10.20-10.50	Coffee break	
Chair: Devid Maniglio and Vamsi Yadavalli		
10.50-11.10	<b>Keiji Numata</b> <i>Rationally-designed silk materials based on the spinning mechanism</i>	RIKEN - Japan
11.10-11.30	<b>Miguel Oliveira</b> <i>Enzymatically-crosslinked silk fibroin hydrogels and bioinks for musculoskeletal tissue engineering and in vitro cancer research</i>	University of Minho - Portugal
11.30-11.50	<b>Gilson Khang</b> <i>Bioengineered Osteoinductive Silk Fibroin Based Scaffold for Bone Tissue Engineering Application</i>	Chonbuk National University - South Korea
11.50-12.10	<b>Philipp Seib</b> <i>Reverse-engineered silk hydrogels as a stem cell delivery matrix</i>	University of Strathclyde -UK
12.10-12.30	<b>Janne Johansson</b> <i>Spidroin domains and their use for generation of biomedically important proteins</i>	Karolinska Institutet - Sweden
12.30-14.30	Lunch break	
Chair: Miguel Oliveira and Keiji Numata		
14.30-14.50	<b>Sean Blamires</b> <i>Spider silk property variability from genome to fibre</i>	University of New South Wales -Australia
14.50-15.10	<b>Cedric Dicko</b> <i>Catalytic and conductive silk fibers</i>	Lund University - Sweden
15.10-15.30	<b>Federico Bosia</b> <i>Mechanical Metamaterials Inspired by Spider Webs</i>	University of Turin - Italy

15.30-15.50	<p style="text-align: center;"><b>Ben Allardyce</b> <i>Silk biomaterials for repairing the middle ear</i></p>	Deakin University - Australia
15.50-16.30	<p>Coffee break &amp; Poster session</p>	
16.30-18.00	<p style="text-align: center;"><b>Round table: What is the next frontier in silk sciences and technologies?</b></p> <p style="text-align: center;">Chairs: Antonella Motta and Rui Reis</p> <p style="text-align: center;">Speakers: David Breslauer – Bolt Threads Keiji Numata – RIKEN Anna Rising – Swedish University of Agricultural Sciences David Kaplan – TUFTS University Pornanong Aramwit – Chulalongkorn University</p>	

**Friday 14 June**

Chair: Park Chan Hum and Martin Humenik		
9.00-9.20	<b>Vamsi Yadavalli</b> <i>Silk biomaterials for the fabrication of functional devices</i>	Virginia Commonwealth University - USA
9.20-9.40	<b>Nuno Neves</b> <i>Thai Silk Fibroin Hydrogels for Biomedical Applications</i>	University of Minho - Portugal
9.40-10.00	<b>Tsunenori Kameda</b> <i>Silk Materials from Various Insects</i>	National Agriculture and Food Research Organization - Japan
10.00-10.20	<b>José Pérez-Rigueiro</b> <i>Lessons from spider and silkworm silk guts</i>	Universidad Politécnica de Madrid, Spain
10.20-10.50	Coffee break	
Chair: Janne Johansson and Philipp Seib		
10.50-11.10	<b>Park Chan Hum</b> <i>Bio 3D printing for tissue engineering using Silk fibroin</i>	Chuncheon Sacred Heart Hospital - South Korea
11.10-11.30	<b>Subhas Kundu</b> <i>3D silk biomaterial based cancer modelling</i>	University of Minho - Portugal
11.30-11.50	<b>Martin Humenik</b> <i>DNA-functionalization of surfaces based on recombinant spider silk proteins</i>	University of Bayreuth - Germany
11.50-12.10	<b>David Breslauer</b> <i>Better Materials for a Better World: Silk without Spiders and Leather without Cows</i>	Bolt Threads - USA
12.10-14.00	Lunch break	
Chair: Chris Holland, and Tsunenori Kameda		
14.00-14.20	<b>Virginia Mastellari e Massimiliano Ornaghi</b> <i>Weaving as a spider: the craft as imitation of nature</i>	University of Freiburg - Germany
14.20-14.40	<b>Vladimir Tsukruk</b> <i>Silk as a Functional Component in Functional Flexible Bionanocomposites</i>	Georgia Tech University - USA
14.40-15.00	<b>Christian Riekell</b> <i>Local Silk Structure Revealed by X-ray Nanodiffraction</i>	The European Synchrotron - France
15.00-15.20	<b>Giovanna Salice</b> <i>Bombyx mori production process: Latino-american experiences</i>	Social Cooperative Sociolario - Italy
15.20-15.40	<b>Taiyo Yoshioka</b> <i>Why is bagworm silk so strong and tough?</i>	National Agriculture and Food Research Organization - Japan
15.40-16.20	Coffee break & Poster session	

Chair: Pornanong Aramwit and Thomas Scheibel		
16.20-16.40	<b>Thomas Scheibel</b> <i>3D-Processing and Applications of Recombinant Spider Silk</i>	University of Bayreuth - Germany
16.40-17.00-	<b>Luca Valentini</b> <i>Combining living microorganisms with regenerated silk for bionicomposites: from smart food packaging to designing artificial mucosa</i>	University of Perugia - Italy
17.00-17.20	<b>Mathias Kwick</b> <i>Interfacial self-assembly and fiber production by periodic compression/expansion of partial spider silk protein</i>	Spiber Technologies - Sweden
17-20-17.40	<b>Chris Holland</b> <i>Understanding the energetic cost of silk self-assembly</i>	University of Sheffield - UK

**Saturday 15 June**

Chair: Gabriele Greco and Kazuharu Arakawa		
9.00-9.20	<b>Martin Hanczyc</b> <i>Regenerated silk fibroin membranes as separators for transparent microbial fuel cells</i>	University of Trento - Italy
9.20-9.40	<b>Rangam Rajikhowa</b> <i>Top down approach to produce silk particles and nanofibres</i>	Deakin University - Australia
9.40-10.00	<b>Anna Rising</b> <i>Improving the properties of artificial spider silk fibers</i>	Swedish University of Agricultural Sciences - Sweden
10.00-10.20	<b>Pornanong Aramwit</b> <i>Sericin for commercialization: prospects and concerns</i>	Chulalongkorn University - Thailand
10.20-10.40	<b>Andreas Teuschl</b> <i>Novel approaches to modify physical and bioactive properties of textile-engineering silk based implants</i>	University of Applied Sciences Technikum Wien - Austria
10.40-11.00	Coffee break	
Chair: Gilson Khang		
11.10-11.30	<b>Ki Hoon Lee</b> <i>Structural Transition of Fibroin Induced by Slow Acidification</i>	Seoul National University – South Korea
11.30-11.50	<b>Antonella Motta</b> <i>Advanced processing methods for silk-based materials</i>	University of Trento - Italy
11.50-12.10	<b>Nicola Pugno</b> <i>Spider lifting</i>	University of Trento - Italy
12.10-12.20	Closing remarks	
12.20-14.00	Lunch break	
15.00-19.30	Visit to Rovereto and cocktail party	

With the support of:



UNIVERSITY  
OF TRENTO - Italy  
Department of Industrial Engineering



UNIVERSITY  
OF TRENTO - Italy  
Department of Civil, Environmental  
and Mechanical Engineering



Laboratory of Bio-  
Inspired & Graphene  
Nanomechanics



Horizon 2020  
European Union Funding  
for Research & Innovation



Comune di Rovereto

