

**22<sup>nd</sup> & 23<sup>rd</sup>  
MAY 2025**

University of Innsbruck, TECH CAMPUS  
Department of Experimental Architecture

# **Towards Integrative Design**

## **Bio-Integrated and Digitally Fabricated**

INTEGRATIVE/S DESIGN  
**EXTREMES**



**BIO-FUTURES**  
For Transplanetary Habitats



**universität  
innsbruck**

# Welcome to the Symposium

## Prof. Dr. Barbara Imhof

Welcome to the symposium "Towards Integrative Design – Bio-Integrated and Digitally Fabricated," which takes place for the first time at the Architecture Faculty of the University of Innsbruck. We are pleased to have you here with us to share and discuss the latest advancements in the field.

As we face tremendous challenges related to climate, political, and social change, we also see many possibilities for new approaches in our built environment. We know that buildings contribute to nearly one-fourth of global CO2 emissions and that waste materials from building deconstruction pose threats to our natural environment. On a social level, with the global population expected to reach 10 billion in the next 30 to 35 years, we will witness an increase in urban inhabitants and the densification of cities and surrounding land. From today's perspective, any future scenario seems extreme.

Here lies the opportunity, like never before: focus on the essentials of good life, radical changes in the way we deal with our built environment, turning waste into resources and transforming our surroundings from inert spaces to living habitats for all beings. Bio-integrated materials and the use of new methods of construction supported by digital fabrication are undoubtedly two main pathways to explore.

This is what we aim to discuss here at this symposium. The goal of this platform is to share new insights in these areas, enabling us to collaborate more effectively, accelerate developments, and create positive opportunities amidst the challenges we face.



*B. Imhof*

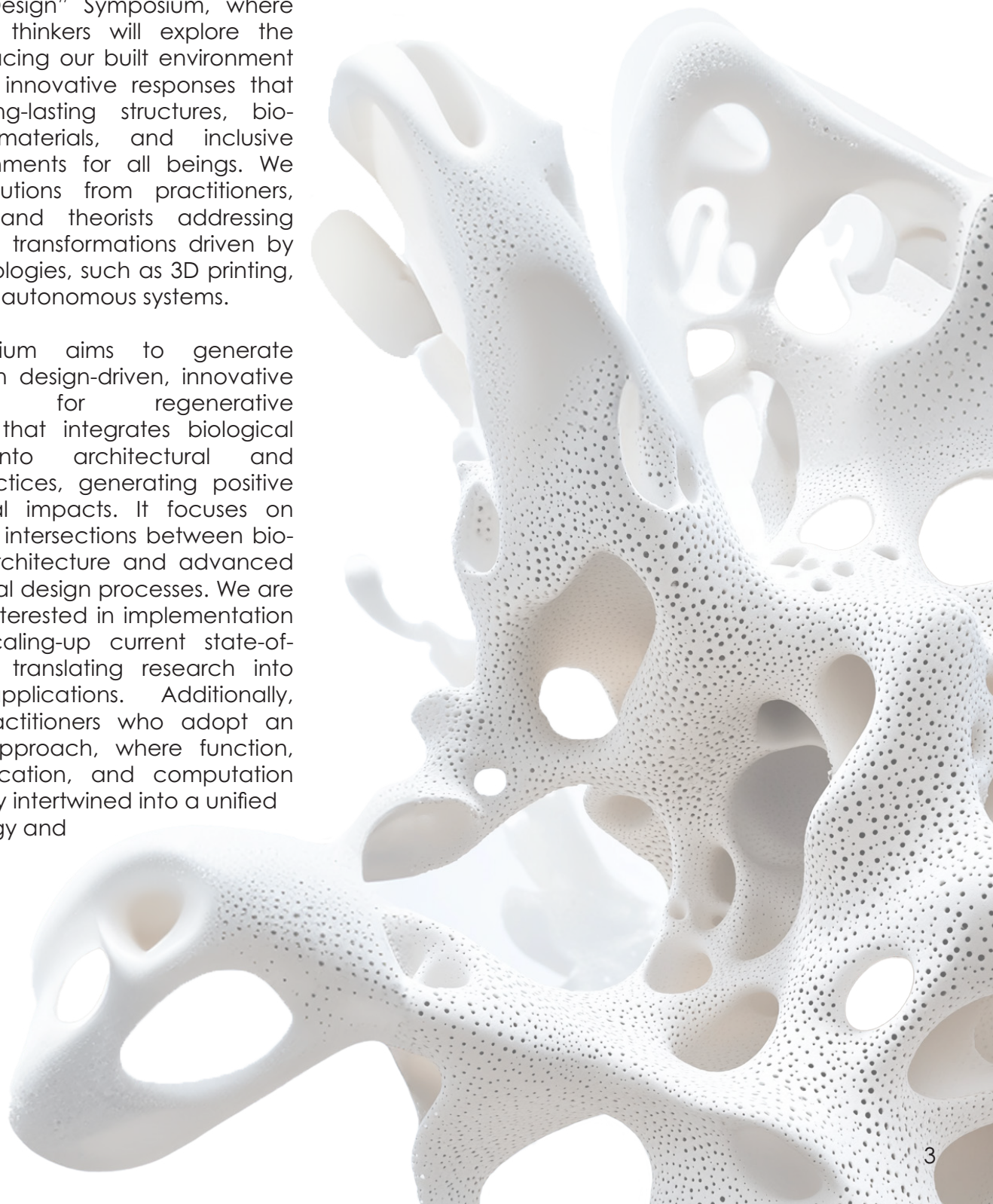
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## About the Symposium

Integrative/s Design | Extremes and Bio-Futures for Transplanetary Habitats are pleased to invite you to the "Towards Integrative Design" Symposium, where experts and thinkers will explore the challenges facing our built environment and present innovative responses that lead to long-lasting structures, bio-integrated materials, and inclusive living environments for all beings. We seek contributions from practitioners, researchers and theorists addressing the profound transformations driven by digital technologies, such as 3D printing, robotics, and autonomous systems.

The symposium aims to generate discussions on design-driven, innovative construction for regenerative architecture that integrates biological principles into architectural and material practices, generating positive environmental impacts. It focuses on exploring the intersections between bio-integrated architecture and advanced computational design processes. We are particularly interested in implementation strategies, scaling-up current state-of-the-art, and translating research into practical applications. Additionally, we seek practitioners who adopt an integrated approach, where function, design, fabrication, and computation are seamlessly intertwined into a unified design strategy and workflow.



**Thursday 22<sup>nd</sup> May**  
**Morning 09:00 - 13:00**

**08:30 | Arrival and Coffee**

**09:00 | Welcome**

**Peter Trummer**  
Welcome by the Dean

**Layla van Ellen**  
Welcome to the Symposium

**09:30 | Keynote - Mette Ramsgaard Thomsen**

**'Built Ecologies – metabolistic resource thinking through biogenic materials'**  
Moderated by Barbara Imhof

Questions

10:15 - Break with coffee

**10:30 | Biomaterials Fabrication**  
Moderated by Monika Brandić-Lipińska

**Marjan Colletti et al.**  
Postplasticism: Spatial Applications of Robotic Fabrication

**Kilian Bauer**  
Exploring Multi-Materiality

**Yuliya Sinke et al.**  
Knitted Bio-based architectural membranes

**Tanvi Khurmi et al.**  
The Architecture of Emergence

11:30 - Break

**11:45 | Framing of Bio-Integration**  
Moderated by Mathias Bank

**Andreas Körner et al.**  
Semper's 'Stoffwechsel' as a conceptual framework

**Pilar Bolumburu-Perez**  
Adapting Structured Literature Reviews for Biodesign Research

**Paul Treichl**  
Designing for Deep Time

12:30 - Lunch

Location: **FOYER**

**Thursday 22<sup>nd</sup> May**  
**Afternoon 14:00 - 19:00**

**14:00 | Imaginaries**

Moderated by Mathias Bank

**Carrie Paterson & Luis Guzmán**  
Micro Forests in Space Habitats

**Wendy Wuyts et al.**  
Science Fiction Prototyping

14:45 - Break with coffee

**15:00 | Weathering and Resource Cycles**

Moderated by Layla van Ellen

**Fabian Eidner et al.**  
Strategies for Adaptive Design and Fabrication

**Anete Salmane et al.**  
A bio-integrated design framework for atmospheric carbon sequestration

15:30 - Break

**16:00 | Metabolisms**

Moderated by Layla van Ellen

**Hangchuan Wei et al.**  
Probiotic Design Interventions

**J. Sebastian Garcia-Medina et al.**  
Innovative Approaches to Metabolic Waste Up-cycling

**Xiyao Shou et al.**  
Bioelectrochemical fiber system

16:45 - Break

**17:30 | Keynote - Alexander Bismarck**

**'Wastes to Composites'**  
Moderated by Barbara Imhof

Questions

Location: **FOYER**

**Thursday 22<sup>nd</sup> May**  
**Evening**

**Apéritif with Posters**

**18:30 - 20:00**

**Posters, Drinks and Fingerfood**

## **Presenters**

**Namita Bhatnagar**

Living Lattices -

Merging Craft, Material Science, and Regenerative Design

**Eliza Biala et al.**

Design'n'Grow Studio - explorations in upscaled biofabrication

**Andreas Biront**

Growth propagation of liquid spawn on non-woven hemp mats

**Monika Brandić-Lipińska**

Alien Technology for Alien Worlds

**Rafaela Cecconi et al.**

AlgaeHalo: Light as a Spectrum

**Suchi Chai et al.**

SEARAMICA: A Seaweed-Based Antifungal and Hygroscopic Material

**Maria Jose Creuheras et al.**

Weathering as an Ecological Design Factor

**Layla van Ellen**

Rhythmic Buildings - towards living adaptable architecture

**Fran Liu et al.**

From Static to Living: Computational strategies

**Paula Andrea Molina**

Exploring Photosynthetic Surfaces Printing Herbarium

**Rachel Pearl**

Project Archipelago: Enhancing Decommissioned oil rigs

**Penn Ryan et al.**

MycoAir: Mycelium Air Filtration for the London Underground

**Natalia Piórecka et al.**

3M Microbial Material Matter

**Miruna Porosnicu et al.**

Design with Dynamics of Bio-materials

**Shylaja Regunathan et al.**

Knit, Swell, Actuate: Exploring moisture responsive actuation and retention

**Richa Saini**

Mycelium Meets Waste: A Review of Paper-Based Mycelium Composites

**Simon Schnittker et al.**

Digital and material intelligence for an adaptive city

**Aisa Shams et al.**

Enhancing the Performance of Acoustic Components

**Can Yardimci et al.**


Mycelium Corbelling: Utilizing Environmental-Driven Design and Machine Learning

**Yin Yu**

Soft Tectonics: Morphologies of Elastic Structure for Coral Reef Environment

**Shu Zhang et al.**

Biomaterial Tending: Sensing and Repairing Bio-integrated Architecture



**Friday 23<sup>rd</sup> May**  
**Morning 09:00 - 13:00**

**08:30 | Arrival and Coffee**

**09:00 | Introduction**

**Karolin Schmidbaur**

Welcome by the Dean of Studies

**Barbara Imhof**

Through the Lens of Extremes

**09:30 | Mycelium Based Composites**

Moderated by Monika Brandić-Lipińska

**Kalaivanan Amudhan et al.**

Living Tex'Celium: Exploring Sustainable Architectural Practices

**Andrea Rossi et al.**

Myco-Lock: Enabling Topological Interlocking Assemblies

10:00 - Break with coffee

**10:15 | Biomaterials Digital Fabrication**

Moderated by Andreas Körner

**Lynn Hyun Kieffer et al.**

Printing Mycelium-Bacteria Bound Composites

**Nadja Gaudillière-Jami et al.**

RotoForm blue biomass

**Alale Mohseni et al.**

Advanced Acoustic Architectural Design

**11:15 | Modelling of Biological Behaviour**

Moderated by Andreas Körner

11:00 - Break

**María Claudia Valverde Rojas et al.**

Rethinking Urban Surfaces: Geometry-Driven Thermal Solutions

**Ataberk Kahraman et al.**

Decoding Ivy Behavior for a Performative Flow Model

**Demet Öztekinçi et al.**


Interscalar Prototype Modeling of Root Formations

**Clemens Preisinger et al.**

Root learnings for architecture

12:30 - Lunch

Location: **FOYER**



**Friday 23<sup>rd</sup> May**  
**Afternoon 14:00 - 17:00**

**14:00 | Keynote - Fabio Gramazio**

**'Digital Materiality in Architecture'**

Moderated by Barbara Imhof

Questions

14:45 Break

**15:00 | Lab and Department Tour**

**Guided tour of facilities, laboratories, and  
different departments on the TECH Campus**

**16:30 | Closing**

Location: **FOYER**

# Saturday 24<sup>th</sup> May

## Social day

### 10:00 | Panorama walk up the Nordkette

Meeting Point: **Hungerburg at 10:00**

Closest bus stop: **Innsbruck Nordkette (bus J)**  
or take the **Hungerburgbahn** designed by Zaha Hadid

We will take the Seegrubenbahn together and there walk the accessible Perspektivenweg (2,8 km)

Symposium attendees get a 25% discount for the Seegrubenbahn & Hafelekarbahn

Students: 35,90€

Regular: 39,00€

### 12:00 | Lunch at Seegrube

### 14:00 | Top of Innsbruck

We will take the Hafelekarbahn together and explore the Top of Innsbruck.

### 16:00 | AUT Architecture Center

Architectural Exhibition  
**The dawn of modern architecture in El Salvador**

Originally a Sud House for the Adamsbräu  
now repurposed as an Exhibition Space

Meeting Point: **AUT Innsbruck**

Closest bus/tram stop:  
**Innsbruck Hauptbahnhof**  
**Innsbruck Heiligegeiststraße**

### 17:30 | Drinks with a View

Meeting Point: **Adler Hotel Terrace**

Closest bus/tram stop:  
**Innsbruck Sillpark**  
**Innsbruck Hauptbahnhof**

# Keynote Information

## Mette Ramsgaard Thomsen -

### Built Ecologies – metabolistic resource thinking through biogenic materials

Professor and Founder of the Center for IT and Architecture (CITA)  
at the Royal Danish Academy of Fine Arts

#### Bio:

A renowned expert in architectural theory and practice, Prof. Ramsgaard Thomsen is known for her innovative approach to design, with a particular focus on integrating technology and human experience. As a professor at the Royal Danish Academy of Fine Art and founder and head of the Centre for IT and Architecture (CITA), she has contributed significantly to the discourse surrounding digital fabrication, environmental sustainability, and architectural ergonomics. Her work explores the intersection of form, function, and technology, shaping the future of architecture.



**Keynote Thursday 22<sup>nd</sup> at 09:30 in the FOYER**

## Alexander Bismarck - Waste to Composites

Professor and Head of the Institute of Materials Chemistry and Research  
at Vienna University

#### Bio:



Alexander Bismarck currently holds a joint appointment at the Faculty of Chemistry of the University of Vienna, Austria and the Department of Chemical Engineering at Imperial College London as Professor in Materials Chemistry in Vienna and Professor of Polymer Materials. He took up his Chair of Materials Chemistry at the University of Vienna in Sept. 2012. AB heads the Polymer and Composite Engineering (PaCE) Group and the Institute of Materials Chemistry & Research. Prior to joining Imperial as a lecturer he held a permanent position as R&D engineer and project leader at Sulzer Innotec/Sulzer Composites (later Gurit Suprem) Winterthur, Switzerland. His research is focusing on various aspects of polymer materials, interface design and manufacturing aspects of advanced composites, renewable materials and porous polymers. His research was and is supported by UK research council (EPSRC), EU FP7, Innovate UK, MoD grants, directly by industry and FWF. He is the Co-PI of the only EPSRC Programme grant in Composites Engineering.

**Keynote Thursday 22<sup>nd</sup> at 17:30 in the FOYER**

## Fabio Gramazio - Digital Materiality in Architecture

Professor and Head of Gramazio Koehler Group at ETH Zurich

#### Bio:

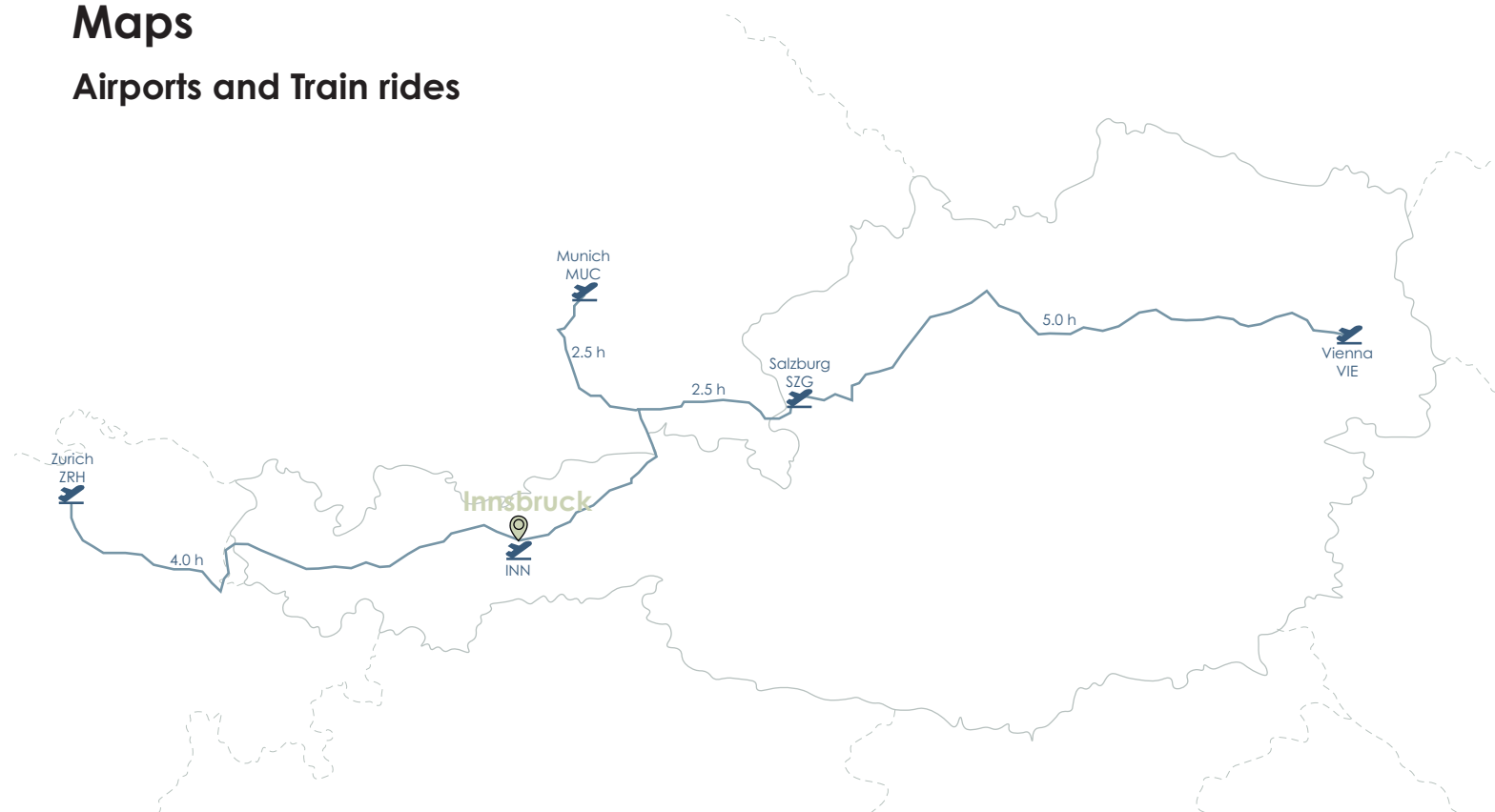
Fabio Gramazio is an architect with multidisciplinary interests ranging from computational design and robotic fabrication to material innovation. In 2000, he co-founded the architecture practice Gramazio Kohler Architects, where numerous award-winning designs have been realised. Opening the world's first architectural robotic laboratory at ETH Zurich, Gramazio Kohler's research has been formative in the field of digital architecture, setting precedence and de facto creating a new research field merging advanced architectural design and additive fabrication processes through the customised use of industrial robots. The research is outlined and theoretically framed in the book "The Robotic Touch: How Robots Change Architecture" (Park Books, 2014).



**Keynote Friday 23<sup>rd</sup> at 14:00 in the FOYER**

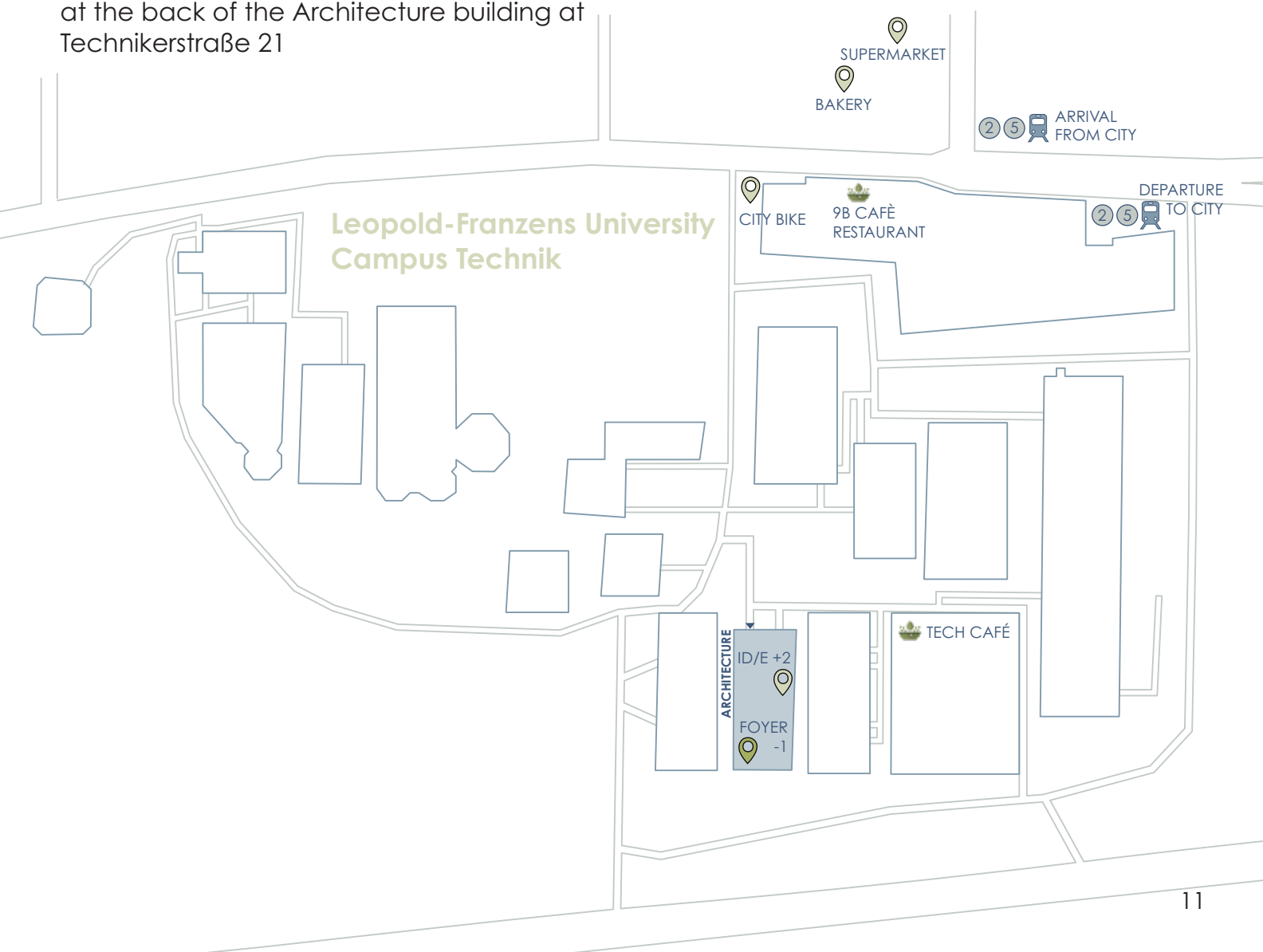
# Maps

## Airports and Train rides



## Campus Guide

Symposium will take place in the Foyer (-1) at the back of the Architecture building at Technikerstraße 21



# Information about Innsbruck

## Public Transportation

Tram and Bus available in Innsbruck

Tickets can be bought at every stop and need to be validated inside public transportation

Otherwise tickets can be obtained at Trafik shops or online:

**IVB Scout App or Wegfinder**

(shows Timetables and Connection Information)

## Bike

Innsbruck has great bike paths

Bikes can be rented via the App across the city and returned at every City Bike location:

**Wegfinder App**

## Car

Parking Spots need to be paid for either onsite or online:

**EasyPark App**

Times:

Mon-Frid 09:00–21:00

Sat 09:00–13:00

for 90–180 min

Longer Parking Periods require Parking Garages



# Enjoying Innsbruck

## Our recommendations

### Restaurants:

#### **Arabisk Innsbruck**

Great syrian food

#### **Tomasselli**

Traditional ice cream - various locations accross the city

#### **Stiftskeller**

Local food in a classic 'Stube'

#### **Meow**

Vegan pizza close to TECH campus

#### **RAED**

Best pizza in town "with a mean cheesecake"

#### **Pizzeria A Casa**

Arguably second best pizza in town, with a sunny terrace

### Cafés:

#### **Brennpunkt Coffee**

Work café and bar

#### **Hocus Pocus**

Cute café/pub with a terrace

### Bars:

#### **Moustache**

Café & bar loved by students

#### **Treibhaus**

Our faculty's go-to for drinks, events and pizzas

#### **Lichtblik 360 Bar**

Best views in town and best amaretto sours

#### **Fuchs & Hase**

Fancy cocktails in town

#### **Die Wäscherei**

Darts bar with views of the city

### Others:

#### **Umbrüggler Alm**

Beautiful spot after a hike up the mountain

#### **Lansersee**

Hike and dip outside of town (50min by bus)

#### **Baggersee**

For a dip within town

### Note:

Bring cash as most places only accept cash

## Accommodations:

### Websites:

[booking.com](https://www.booking.com)

[Airbnb.com](https://www.airbnb.com)

### Info:

Innsbruck is very accessible, any places would be great, we recommend the Höttingen or the city centre neighbourhood to be closeby the University and highlights

When you book 3 nights in a row you get a discount for public transportation



# Contact Details

## Organisers

Lead:

Prof. Barbara Imhof - [barbara.imhof@uibk.ac.at](mailto:barbara.imhof@uibk.ac.at)

Scientific programme and presenter lead:

Layla van Ellen - [Layla.van-ellen@uibk.ac.at](mailto:Layla.van-ellen@uibk.ac.at)

Programme co-lead:

Monika Brandić-Lipińska - [mh.lipinska@gmail.com](mailto:mh.lipinska@gmail.com)

Onsite Help:

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Florenz Marks - [florenz.marks@student.uibk.ac.at](mailto:florenz.marks@student.uibk.ac.at)

## Uni & Emergency Contacts

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Facility manager:

Norbert Zenleser +43 676872521820

Safety expert:

DI Christoph Genser +43 676872521380

Fire department 122

Police 133

Emergency ambulance 144



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