



## SUSTAINABLE SYSTEMS

Fields of Expertise TU Graz

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Source: Lunghammer – TU Graz

**L**ast summer the FoE Sustainable Systems announced the search for a tenure-track assistant professor for “low carbon building technologies”.

Previously delayed by the pandemic, the selection process was concluded this spring. The selection committee deemed Marcella Ruschi Mendes Saade the most promising of a diverse and strong field of candidates. A civil engineer specialized in life cycle assessment, she joined the Institute of Structural Design (ITE) at the Faculty of Architecture in May.

Marcella Ruschi Mendes Saade is also the author of one of the successful bids in the 15th round of our field’s initial funding program. She is proposing 3DProspect, a prospective study on the environmental feasibility of 3D-printed concrete structures. Additive Manufacturing (AM) methods are gaining importance in construction and are seen as a potentially disruptive technology for the building sector. The 3D printing of concrete is a particularly interesting AM method and ITE researchers have successfully developed applications for this technology that promise to significantly reduce the carbon footprint of concrete structures. Saade’s proposed

FFG Bridge project promises to put these efforts into a broader context and to provide guidance on how to move towards the integration of AM methods in construction while ensuring that environmental targets are met.

Another successful bid to do with concrete was by Isabel Galan Garcia from the Institute of Applied Geosciences. She has assembled an interdisciplinary consortium of leading scientists from institutions across Europe to study the Durability of Low Carbon Cements. The consortium plans to apply for funding of a EU HORIZON Doctoral Network under the Marie Skłodowska-Curie Actions program. Coordinated by TU Graz, the goal of the proposed network is to train the next generation of young scientists, empowering them with the skills and knowledge necessary to develop by 2050 a carbon-neutral and durable cement for Europe, thereby paving the way to meet the aims of the Paris Agreement.

While looking for new low-carbon construction methods is doubtlessly necessary, achieving carbon neutrality will also require making better use of existing building stock. Under the title Counterintuitive Typologies, Andreas Lechner of the Institute of Building Typologies is proposing to develop novel design strategies that can enhance the attractiveness of urban sprawl areas by re-using rather than destroying derelict buildings in these zones. Along with a consortium of partners from academia and industry, he wants to apply for funding in the FFG’s “Stadt der Zukunft” program.

The study of complex subsurface geosystems is gaining importance in the quest for sustainable energy sources. With the project PreGeoSys, Ronny Boch from the Institute of Applied Geosciences proposes a pioneering geochemical approach to study the access to and investigation of established and new geothermal wells and energy-producing facilities in the Styrian Basin (Austria) and Pannonian Basin (Hungary). With partners from Hungary, Boch plans to apply for funding from the Austrian Science foundation FWF.

Normally we only have funding for four projects, but in this round we agreed with Vice Rector Bischof to fund a particularly prominent fifth project. HyCentA-COMET, a proposal for a K1 competence center put forward by Helmut Eichlseder of the Institute of Internal Combustion Engines and Thermodynamics, builds on the vast experience in hydrogen research already present at TU Graz, with over 50 million euros worth of research infrastructure and 160 researchers across multiple institutes working on hydrogen-related topics. A large consortium of partners from academia and industry is joining in the effort to establish a center for the research and development of solutions in all aspects of green and emission-free hydrogen technologies.

We wish all successful applicants the best of luck with their proposals and hope that the resulting projects can one day be presented on these pages, just like the work of Marcella Ruschi Mendes Saade on page 34.

