

Editorial

## Announcing the 2018 *Designs* Travel Award

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With the goal of promoting the development of early career investigators in the field of **engineering designs**, *Designs* welcomed applications for the 2018 *Designs* Travel Award for MSc and PhD students. We enjoyed a large number of very highly meritorious applications for our Travel Award and it was not an easy task to select the top candidate. Nevertheless, with the assistance of the assessment committee, we have identified one outstanding candidate. On behalf of the Editors of *Designs*, I am pleased to announce that the inaugural *Designs* Travel Award for 2018 has been granted to **Mr. David Schmelzeisen**, a PhD student from the Institut für Textiltechnik (ITA), RWTH Aachen University, Aachen, Germany (Figure 1). He will receive 500 CHF to help support travel to participate at the ISWC 2018 conference in Singapore this autumn.



**Figure 1.** Mr. David Schmelzeisen.

Mr. David Schmelzeisen studied Mechanical Engineering at RWTH Aachen University. He started to focus on textiles and textile engineering and received his MSc degree in Textile Engineering, before joining the research team in the field of smart textiles at the Institut für Textiltechnik of RWTH Aachen University. Furthermore, he developed electronic sensor systems for integration into textiles at ETH Zurich. During his PhD, he started researching textile welding and production technologies for smart textiles. His current research topic is 4D textiles; textiles that can be programmed to change functionality or shape over time. His research can be subdivided into the categories of simulation, material development and testing, and product design and production.

For simulation purposes, Mr. Schmelzeisen studied the 4D textile concept using printed stiffeners on a stretched textile substrate. Specifically, a detailed finite element model was created for simple rectangular elements together with the group of Scott Stapleton at UMass Lowell, Massachusetts,

USA. Then, material models were chosen for the substrates, and tensile tests were used to characterize the textile and stiffeners. The effectiveness and superiority of the developed model was validated both numerically and experimentally. Finally, more complicated grids were created and modeled to demonstrate the usefulness of the model for the design of 4D textiles.

The behavior of this system depends, amongst other things, on the adhesion between the textile and the printed polymer. Not only does this dictate the static strength of the system, but it is also key to future studies of durability and reliability, as the structure undergoes multiple transitions from one metastable state to another. Together with Prof. Chris Pastore, visiting professor from Thomas Jefferson University, Philadelphia, USA, test procedures were developed and realized to explore the effects of a knit fabric structure on the peel strength of the hybrid 3D-printed textile.

Together with Prof. Stephan Wensveen from TU Eindhoven, the Netherlands, a method for the design of 4D textile structures has been developed based on design thinking, reflective transformative design and smart textile services design, and the construction methodology by Pahl/Beitz. The new design approach has been published in Springer and is currently in use for different product developments in the industry.

The Editorial Board Members, Managing Editor and the editorial team congratulate Mr. David Schmelzeisen on winning the 2018 *Designs* Travel Award.

We are also grateful to all applicants—thank you for letting us get to know you and your fascinating range of research.

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The competition for the 2019 *Designs* Travel Awards will be open for applications this September. Please check <http://www.mdpi.com/journal/designs> for more information closer to this date.

**Conflicts of Interest:** The authors declare no conflict of interest.



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