

## PhD in Tribology: **Steel Surfaces with Enhanced Tactile Feel**

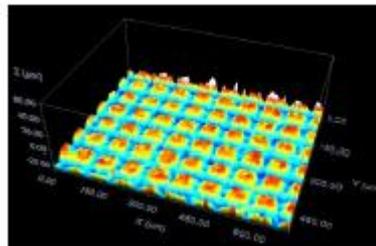
Have you ever thought of creating your own surface out of stainless steel? We are looking for a scientist with a background in metal forming who has that dream and is willing to find the ways and means to create new sheet surfaces with predefined feel like soft, smooth or silky. Designing the tactile feel in daily interaction with steel products will directly increase the customer satisfaction: people feel more happy using steel products! A steel surface finish with a designed feel is a major breakthrough in the scientific community dealing with tribology, psychology of touch and contact mechanics of steel surface. The knowledge intensive technology development can serve as a start for new scientific developments in the future with respect to the predicting parameters for human-steel sheet interactions.

### **The challenge**

The relative importance of the surface roughness of steel sheet is well recognized by the leading steel manufacturers. It is well known that surface texturing can be used as a means for improving the performance of components exposed to friction and wear. A surface finish with a soft silky feel has a high potential to increase sales within the domestic and automotive appliances domains. While current knowledge on the relation between contact mechanics, tribology and human tactile perception is relatively limited.

The objective of this PhD project is to produce steel sheet with pre-defined human perception of the surface roughness in an economic, clean and safe way, including:

- Establishing a relation between surface geometrical features and human touch for steel sheet material
- Developing of models that predict the interaction of the sheet during its use



You are expected to do a combination of advanced predictive simulations in the field of metal forming and experimental work on skin – roughness interactions, aimed at understanding friction at the interface. A translation to touch is done with panel testing.

The research is supported by a well equipped European consortium (including Acerinox, Tata Steel, Swerea IVF AB, Tekniker and University of Twente), focussed on the development of innovative steel surfaces. Production capacity at the industrial partners is allocated to actually produce steel sheet surfaces with the designed texture at the end of the project. As a PhD student of the Skin Tribology group of the University of Twente, you have all the tools available to perform tribological research at world class level in a stimulating scientific environment.

### **Our offer**

We offer a scientific education on a multidisciplinary subject. Successful applicants will be appointed on a 4 year contract as a researcher. The salary scale starts at €2042, -gross per

month for the first year and extends to a maximum of € 2612, -gross per month in the fourth year (in accordance with the Collective Labour Agreement for Dutch Universities). Additionally, the University of Twente provides excellent facilities for professional and personal development, a holiday allowance (amounts to 8%), an end-of-year bonus (amounts to 8,3%) and a number of additional benefits.

### **Your profile**

You are a highly motivated, enthusiastic and fluent English speaking researcher with an MSc degree in mechanical engineering, applied physics or metals science or in a closely related discipline, with theoretical as well as experimental skills and some knowledge on Tribology. A background in metal forming, especially cold rolling or forging, is required.

### **Application**

Your application should consist of:

- A full Curriculum Vitae (including a list of all courses + marks, contact information for at least two academic references)
- Research statement indicating your background and interests, and how it aligns with the current position

Please combine the above required documents into one PDF document and send your application to the following contacts:

Chair Skin Tribology

Prof. dr. ir. E. van der Heide

E-mail: [e.vanderheide@utwente.nl](mailto:e.vanderheide@utwente.nl);

Assistant professor: Dr. Xiangqiong (Lydia) Zeng

E-mail: [x.zeng@utwente.nl](mailto:x.zeng@utwente.nl)

Department of Surface Technology and Tribology

Faculty of Engineering Technology

University of Twente

Horst Building, Drienerlolaan 5, Postbox 217, 7500 AE Enschede, The Netherlands,

<http://www.utwente.nl/ctw/tr/>