

# Professor Materials Engineering: Corrosion and Wear of Metallic Surfaces

Ref. ZAP-2021-41

KU Leuven has a full-time academic vacancy in the area of corrosion and wear of metallic surfaces at the Ghent technology campus. We are looking for internationally orientated candidates with an excellent interdisciplinary research record and with educational competencies within the field of material science and production technology, strongly focussed on mechanical behaviour of materials, experimental and numerical methods, and metal joining techniques. The successful applicant will be appointed in the Department of Materials Engineering and the Faculty of Engineering Technology of the Science, Engineering and Technology Group of KU Leuven.

The faculty of Engineering Technology has an extensive national and international network, both in the academic and business world.

The research group Mechanics of Materials, Products and Processes (MeM2P) can build upon a solid research infrastructure, an extensive international network, connections with companies and non-profit organisations, a stable offer of highly talented PhD students and a supportive work environment. In the past MeM2P conducted research into the mechanical behaviour of materials in industrial applications with an emphasis on developing both numerical and experimental techniques to identify this behaviour. This effort led to the creation of two spin-off companies so far. In recent years the research has intensified on the static and dynamic behaviour of joints in metal structures, with an increasing attention to (fretting) fatigue and fracture, a field in which additional expertise would be welcomed.

<https://iww.kuleuven.be/onderzoek/mem2p>

## Duties

### Research

You develop a research programme at an international level in the domain of the vacancy. The progressive deterioration of metallic surfaces, due to corrosion and wear, ultimately leads to a loss of the performance of a product or structure. This loss of performance is further complicated by the fact that the combined effects of wear and corrosion often result in a deterioration that is much larger/faster than the additive effects of each process taken alone, indicating a substantial interaction between the two processes in the given environment. While corrosion often occurs in the absence of mechanical wear, the opposite is rarely true. The surface engineering of metals is a multidisciplinary activity intended to tailor the properties of a metal surface so that its function and serviceability can be improved. This requires a better understanding of the mechanisms at work, both from an experimental and theoretical perspective. For this position, special attention is to be paid to mechanical connections (bolts, rivets, clinches) in which both phenomena play a crucial role, especially when dealing with higher strength steel grades.

The proposed research line is complementary to the ongoing activities in the MeM2P group. Several ongoing efforts on joining of metals and fretting fatigue failure in high strength and additive manufactured steels, would benefit from additional expertise on wear and corrosion.

You strengthen existing research lines and provide complementary expertise in the areas of corrosion, wear, fatigue, fracture, metallography, numerical and experimental methods (SEM, EBSD, XRD...).

You engage in targeted scientific research, resulting in PhD's and publications that meet international standards and lead to broad international recognition.

You support or initiate a network of companies through the valorisation of research results and by delivering industrial services, aimed at strengthening industrial innovation.

As part of your research programme, you develop international partnerships, within the academic world as well as with industrial partners.

You are able to acquire competitive funding, both project-based government funding as well as industrial funding.

You strive for excellence and thus contribute to the further development of the research group and the faculty.

You pay the required attention to the technology transfer and application of the results of your research in industry/government/society.

### Teaching

You provide high-quality education for both bachelor and master students in the field of material science and production technology, with a clear commitment to the quality of the programme as a whole. All professors are expected to teach a few basic undergraduate courses.

You contribute to the faculty's and the university's pedagogical project through the supervision of student projects (for example bachelor's and master's theses) and by acting as a promotor of PhD students.

You develop your teaching in accordance with KU Leuven's views on activating and researched-based education and make use of the possibilities for educational professionalization offered by the faculty and the university.

Your teaching duties are determined in agreement and are based on your specific profile. The scope is limited in the first years of your appointment. In your further career, the faculty will also pay a great deal of attention to the balance between research and teaching time.

### Service

You are prepared to provide services to the scientific community, to society and to the university in function of the needs and your personal interests.

You maintain close contact with the local industry (both large suppliers and end users).

You play an active part in promoting the Faculty of Engineering Technology towards new students and the wider professional field by participating in open days, networking events and fairs, ...

## Profile

You have a PhD in Engineering Science or Engineering Technology with an emphasis on materials and/or mechanical engineering.

You have a strong research track record in the discipline, evidenced by your publications or by your research experience in industry. You have the ambition to contribute to the valorisation of research in industry and in society. International experience is an important advantage.

You have verifiable qualities related to academic education. Teaching experience is an advantage.

You possess organisational skills and have a cooperative attitude. You also possess leadership competencies in a university or industry context.

Proficiency in English is required.

The official language used at KU Leuven is Dutch. If you do not speak Dutch (or do not speak it well) at the start of employment, KU Leuven will provide language training to enable you to take part in meetings.

Before teaching courses in Dutch or English, you will be given the opportunity to learn Dutch, respectively English, to the required standard.

## Offer

We offer full-time employment in an intellectually challenging environment.

KU Leuven is a research-intensive, internationally oriented university that carries out both fundamental and applied scientific research. Our university is highly focused on interdisciplinary and multidisciplinary research and strives for international excellence. In this regard, the university actively works together with research partners in Belgium and abroad and provides its students with an academic education that is based on high-quality scientific research.

You will work at the KU Leuven Technology Campus Ghent, in a historic city with a 40-minute rail connection to Brussels, and about three hours train to Paris, London and Amsterdam.

Depending on your record and qualifications, you will be appointed to or tenured in one of the grades of the academic staff: assistant professor, associate professor, professor or full professor. In principle, junior researchers are appointed as assistant professor on the tenure track for a period of 5 years. At the end of this period and a positive evaluation, they are permanently appointed (or tenured) as associate professor.

## Interested?

For more information on the contents of the job, please contact:

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\* Prof. dr. ir. Dimitri Debruyne, departmental vice-chair of the Department of Materials Engineering (Dimitri.debruyne@kuleuven.be, +32 9 265 87 12) or

You can submit your application until XXXX, only through our online application system. If you have problems submitting your application online, please send an email to [solliciteren@kuleuven.be](mailto:solliciteren@kuleuven.be).

Add to your application following documents in English (more information is available on the KU Leuven job site):

- your biosketch in which you indicate your added value as an academic for research, education and service to society of your past career and of your future activities (maximum 2 pages);
- a file on your five most important publications or realizations;
- an extensive cv including a full publication list and if applicable a portfolio of your architectural projects;
- your research plan with focus on the development of your research line and research team in relation with the colleague-researchers of the entity of employment (maximum 4 pages);
- your vision on academic education and its organization (maximum 2 pages);
- your contribution to society by outreach and public communication on science and technology, internal representation in boards and councils and service activities directly in relation to your developed expertise (maximum 1 page);
- your vision on leadership (maximum 1 page).

KU Leuven is committed to creating a diverse environment and is therefore an equal opportunity employer. It explicitly encourages candidates from groups that are currently underrepresented at the university to submit their applications.

KU Leuven places great importance on research integrity and ethical conduct and will therefore ask you to sign an integrity statement upon appointment.

You can apply for this job no later than July 20, 2021 via the online application tool :

<http://www.kuleuven.be/eapplyingforjobs/60003363>

KU Leuven seeks to foster an environment where all talents can flourish, regardless of gender, age, cultural background, nationality or impairments. If you have any questions relating to accessibility or support, please contact us at [diversiteit.HR@kuleuven.be](mailto:diversiteit.HR@kuleuven.be).