PostDoc position for 18 months

Coupling effect between ageing and mechanical loading - Case study of elastomer degradation under mechanical loading

This project aims to study coupling effects between the mechanical loading of an elastomer and chemical degradation such as oxidation or hydrolysis in order to develop and validate more reliable lifetime prediction tools. In service, polymers are generally used under stress meaning that there is a coupling between chemical degradation and mechanical loading. In most of the studies, the coupling of both is not considered. When long term behavior of a polymer is considered only from a mechanical point of view, the creep or fatigue predictions do not consider any chemical degradation effects, even though their impacts have been clearly demonstrated in the past.

The main idea here is to propose a new and original approach at the frontier between the mechanical approach (considering mainly damage in materials) and the chemical point of view (considering chain scission and crosslinking).

We believe that this innovative approach will be the way to go for the future research in material degradation either for the research and for the industries. It will allow to get a better understanding and therefore a better design and choice of material depending on the application.

The post doc will be carried out on two sites, at Ifremer in Brest and at the PIMM laboratory in Paris, with a currently undefined distribution. The exact organization of the presence time on each site is to be defined according to the needs of the project.

Within this project funded by the Deutch Polymer Intitute (DPI), the PostDoc fellow will be employed by Ifremer. The gross annual remuneration is at least € 34,500 depending on experience. Start date: 03/01/2022

Supervisors :

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DPI The Polymer Research Platform

Ifremer

Procédés et Ingénierie en Mécanique et Matériaux