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Nanodesk project: development of a web platform for the selection of the nanoparticles of interest for the plastic industry

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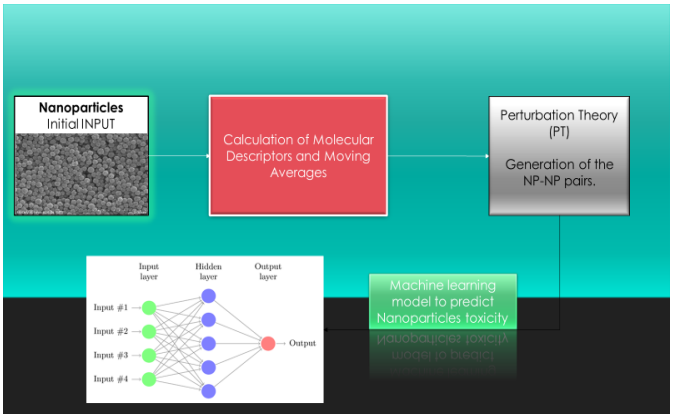
Graphical Abstract



Abstract.

Predict Nanoparticles (NP) toxicity is one of the biggest deal for both toxicologists and computational chemistries. The Nanodesk project is a SUDOE interreg project (Project Code: SOE1/P1/E0215) aimed at the development of an interactive and easy to use web-platform which will be help the plastic industry in the selection of the safer nanomaterials (NMs). The web-platform will implement a series of machine learning approaches which will be identify the safer NMs amongst a list selected by the industry and the scientific committee of the project. The project has started on July 2016 and will last for 36 month.

Introduction

The use of Nanoparticles (NP) in the plastic industry has increased significantly over recent years as demonstrated by the number of patents and products containing NP. On one hand the inclusion of these materials in classic plastic materials is leading to new product, with a high added value and incredible performance; on the other hand, there is also a growing concern regarding the hazard and the toxicity of these new materials. The Nanodesk project aims at creating a bridge to link the NP of interest in the plastic sector and its toxicity. In fact, one of the main aim of this project is to develop a set of QSAR materials in order to predict the toxicity of a set of selected NP. The QSAR models are implemented for the prediction of four properties of special relevance for the evaluation of the danger of the nanometer are implemented in the web platform NanoDesk, being one of its essential components.

The development of these models is essential in the context of this project, since its application will allow the determination of the hazard profile of the NMs, also making it an alternative to in vitro and in vivo tests, as recommended by international institutions such as the OECD and The ECHA.

Finally, these QSAR models will be implemented in an easy to use web-tool which will allow the plastic industry and other relevant stakeholders to select the safer NP.

References

Nanodesk project: http://sudoenanodesk.europeanprojects.net/en/