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#AEFA21 Awards

First prize for the thesis of Agnès Harlay, doctoral student at ARMOR

On the 25th European Conference on Additive Manufacturing, Agnès Harlay, doctoral student at ARMOR, IMT Mines Alès and IGCM Montpellier, won first prize in the "My thesis in 180 seconds" category. This recognition rewards her research work on thermoplastic elastomer materials dedicated to 3D printing. With its almost century-old history of innovation, the industrial group ARMOR continuously invests in research and development, in particular through its support of doctoral students.

Agnès Harlay, winner of the #AEFA21 Awards, "My thesis in 180 seconds" category

Agnès Harlay, doctoral student at ARMOR, IMT Mines Alès and IGCM Montpellier, won first prize in the "My thesis in 180 seconds" category during the 25th European Additive Manufacturing Conference, which took place on 8, 9 and 10 June 2021. This trophy rewards her work on understanding the phenomena underlying the printability of thermoplastic elastomer materials. A research work led by Jean-Jacques Robin (ICGM), José-Marie Lopez Cuesta (PCH - IMT Mines Alès), under the supervision of Sébastien Blanquer (ICGM) and Arnaud Regazzi (LMGC - IMT Mines Alès). Agnès Harlay was scored for her mediation on the subject and for the structuring of her presentation, her talent as a speaker and her involvement.

Improving material properties to multiply applications

Agnès Harlay's thesis is part of the process of bespoke design of filaments for 3D printing at ARMOR's Kimya Lab. Specializing in the design of high added value 3D materials, ARMOR, through its Kimya additive manufacturing offer and its dedicated R&D site, uses its formulation expertise for developing solutions addressing technical industrial issues. It is therefore natural that the company has decided to fund and support Agnès Harlay's research project for three years with the support of ANRT (CIFRE thesis).

"*In recent years, improvements in printers and processes associated with changing print settings have significantly reduced the anisotropy of parts. Nevertheless, the properties of printed parts remain mainly dependent on the properties of the original polymers*" explains Agnès Harlay. "*Creating new polymers with mechanical properties suitable for additive manufacturing is therefore a major challenge for filament manufacturers such as ARMOR*" she adds. "*Thus, in this thesis, a triple strategy is implemented to design thermoplastic elastomer filaments for additive manufacturing guaranteeing good nozzle flow and good inter-layer adhesion and therefore, more generally, good printability*" she explains.

ARMOR, a history of innovation

A 100-year-old industrial group, ARMOR has been able to constantly renew itself throughout its history by betting on innovation. Very recently, over the 2018-2022 period, the company implemented a €130m investment plan. Expert in chemical formulation and high-precision coating, the industrial puts its historical expertise at the service of the development of innovative activities dedicated to industries of the future, such as additive manufacturing.

"*A pioneer in the manufacture of carbon paper in France, ARMOR has never ceased to be driven by the energy of innovation throughout its existence. It is through our constant investments in research and development that we have been able to ensure our growth and strengthen our position as market leader. At ARMOR, we place socially responsible innovation at the core of our business model in order to provide concrete responses to society's challenges*" states Hubert de Boisredon, Chairman and CEO of ARMOR.

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About ARMOR

ARMOR specialises in the industrial formulation of inks and the coating of thin layers onto thin films. The Group is the global market leader in the design and manufacture of thermal transfer ribbons for printing variable traceability data on labels and flexible packaging. The European market leader in innovative and sustainable printing services and consumables, the Group is a pioneer in the development and production of industrial inks and innovative materials, such as organic solar films, coated collectors for electric batteries and bespoke filaments for additive manufacturing. With an international presence, ARMOR has nearly 2,000 employees in some 20 different countries. In 2020 it posted annual revenue of €274m. Each year the group invests nearly €30m in industrial equipment and R&D. ARMOR is a responsible company committed to stimulating innovation within society. **www.armor-group.com**

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