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## Nanoplastics and patents – a couple for a better future

Laura Durán (Balder IP) · Tuesday, December 10th, 2024

Although plastics are essential to the economy, plastic pollution is threatening ecosystems all over the planet. Plastic waste remains in the environment, taking from decades to centuries to naturally decompose. In addition, plastic materials also degrade, producing small particles, which are not visible to the human eye, leading to the terms “microplastic” and “nanoplastic”. Microplastics are also intentionally added to commercial products including cleaning products and fertilisers.

Nanoplastics are typically generated either by the fragmentation of microplastics or released from other sources such as plastic materials used in electronics, paints, adhesives, etc. Evidence points to microplastics and nanoplastics playing a relevant role in the loss of biodiversity and alteration of ecosystems. Humans are also exposed to these small plastic particles through ingestion, inhalation, and skin contact.

In 2023, the number of patent applications published by the European Patent Office (EPO) in the field of nanotechnology, including inventions directed to nanoplastics, was almost the double than in 2018 (1566 vs. 2960). These numbers are largely due to the existing challenges in the ability to reliably detect, quantify, and separate nanoplastics, particularly in complex mixtures.

Due to these challenges, there are difficulties in the enforcement of regulations addressing them. For example, in September 2023 the EU chemical legislation REACH restricted the intentional addition of microplastics to commercial products using a broad definition of them, i.e. below five millimeters diameter. A lower size limit was intentionally not included to cover nanoplastics because current analytical methods are unable to efficiently distinguish plastics particles with a diameter below 1 micrometer diameter in products, that is, nanoplastics.

European universities and public research organisations are pioneering a range of technologies directed to the detection and separation of nanoplastics. One of these developed methods for a better detection and quantification of nanoplastics relies on the staining of nanoplastics with fluorescence-based dyes such as Nile Red. Nanorobots, nanosized structures having autonomous motion capabilities, are also emerging as a promising pollutant remover, in particular for the removal of nanoplastics from water.

An additional major challenge faced by many of these innovators is bringing their research findings to the market. Intellectual property rights such as patents can help them to commercialise their findings. In Europe, industries that make a relevant use of their IP rights account for 45% of the EU’s GDP and 39% of employment (industry analysis report by EPO and EUIPO, October 2022).

IP rights also make it easier for innovative start-ups and spin-offs to attract venture capital and pursue licensing agreements. These numbers sheds light on how innovation, coupled with regulations (the EU Commission is committed to fighting microplastics pollution by setting a target to reduce it up to 30% by 2030), can create a more safe, sustainable and prosperous future.

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The image is a promotional graphic for a survey report. It features a dark background with a circular inset showing a gavel resting on a glowing digital circuit board. The text is white and blue. At the top left, it says '2024 Future Ready Lawyer Survey Report'. Below that, in large bold letters, is 'Legal innovation: Seizing the future or falling behind?'. A blue button with white text says 'Download your free copy →'. At the bottom left is the Wolters Kluwer logo. At the bottom right is a white box with the 'FR Future Ready' logo and the word 'LAWYER' below it.

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