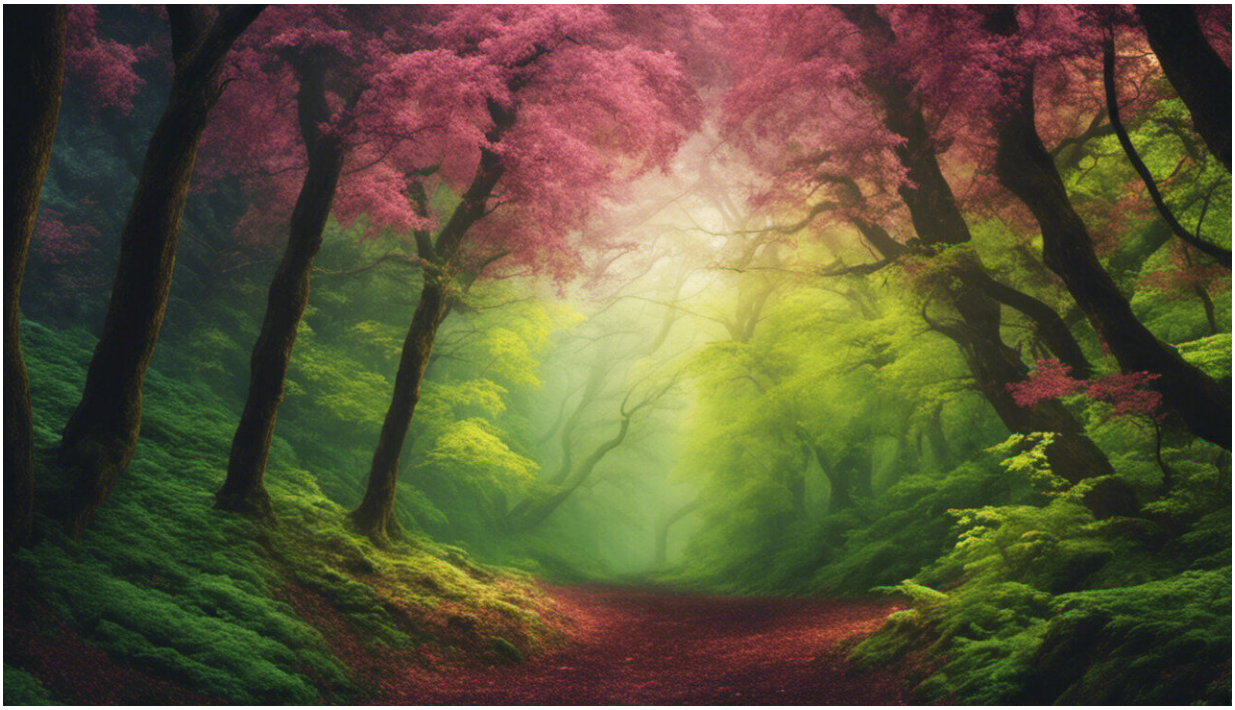
Leveraging the nanoscale for greener lighting

November 14 2013



Credit: AI-generated image (disclaimer)

Making lighting greener is no easy feat, but researchers in Europe are showing the way forward.

The EU project EMIL (Exceptional Materials via Ionic Liquids) targeted the improvement of environmentally friendly technologies, in particular for applications in the field of efficient solar cells and innovative light sources.

With a European Research Council (ERC) Starting grant, Professor Anja-Verena Mudring of the chemistry and biochemistry faculty at Ruhr-Universität Bochum in Germany and her research team coated nano energy-conversion phosphors onto devices like light-emitting diodes (LEDs), solar cells and compact fluorescent lamps to test the concept.

The technique, which she says has market potential, will result in higher energy efficiency, and safer and greener production of such lighting. For that reason, Prof. Mudring received a 'Proof-of-Concept' grant called BrightEMIL (EMIL goes green - exceptional materials from ionic liquids for energy saving applications in photonics') to test in particular the potential of ionic liquids as new solvents for generating nanoscale phosphors.

The project team worked to make the results generated from EMIL marketable.

Ionic liquids are salts that are still liquid even at room temperature and are suitable for the synthesis of inorganic materials. They are unique in that they consist of large ions that encapsulate small particles and cannot grow further. They are recyclable, easy to handle, non-flammable and non-volatile.

Lighting represents 19 percent of global energy consumption and produces 7 percent of all carbon emissions. Replacing traditional light devices with more energy-efficient ones could result in a two percentage point drop of energy consumption worldwide.

BRIGHTEMIL received around EUR 150 000 in EU funding and ended in February 2013. EMIL received around EUR 1 million in EU funding and ended in August 2013.

More information: BRIGHTEMIL project factsheet:

cordis.europa.eu/projects/rcn/102547_en.html

EMIL project factsheet: cordis.europa.eu/projects/rcn/87688_en.html

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