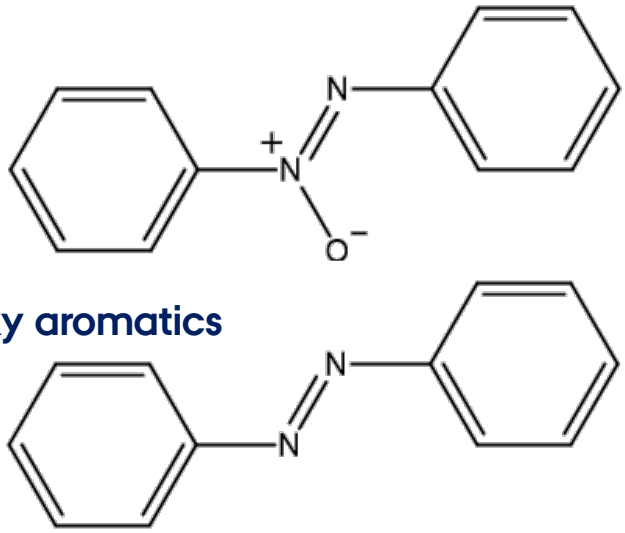
AARHUS UNIVERSITY

TECHNOLOGY PRESENTATION



Chemical synthesis of azo and azoxy aromatics via photocatalysis

TECHNOLOGY SUMMARY

Aarhus University have made an invention relating to a novel manufacturing method for azo-/azoxy aromatics. The process involves visible light-photo reduction of nitroaromatic compounds at room temperature in a one-step reaction. The method is considered superior in that it is more cost effective as well as more health and environmentally friendly than traditional manufacturing methods.

APPLICATIONS

The technology is believed to be applicable in industry as a cheaper and more health and environmental friendly alternative to current manufacturing methods. It is capable of producing a number of different azo- and azoxy-aromatics which can be used as precursors in the dye-, electronic-, pigment- and drug industries.

CURRENT STATE

Seven commercially available nitroaromatics have been tested (lab-scale, artificial light) under identical reaction conditions, producing a total of fourteen different azo- and azoxy-compounds. Conversion rate of up to 97% have been proved.

The industrial potential of the process was demonstrated by: (a) Successfully scaling up the reaction to 800 mL and further to 80 L on the roof-top of a building to use solar light exclusely to drive the reaction. Azoxybenzene was achieved with high conversion and selectivity (~90%). (b) The precursor concentration has been five-fold increased in comparison with the initial lab-scale reactions.

A paper describing all details of the invented technology was submitted in April 2017 and expected published by August 2017.

COMMERCIAL PERSPECTIVES

The proposed technology is based on a low-cost metal-free catalyst and offers an environmentally friendly and sustainable production method. The method use solar light or artificial visible light and eliminates the need for toxic solvents as well as high pressure and temperatures, as are required in traditional methods. The reaction is performed in a light transparent reactor at ambient pressure, which makes it easily scalable.

INTELLECTUAL PROPERTY RIGTHS

The technology is protected in a priority patent application filed in March 2017.

BUSINESS OPPORTUNITY

We are looking for a company interested in collaborating around a feasibility study. We offer the possibility of an option agreement on the technology and potentially a license.

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