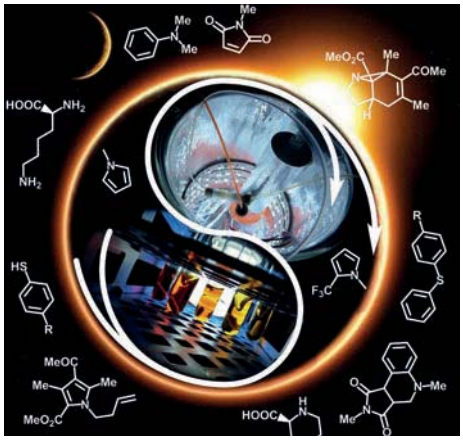
Combining innovative chemical processes with innovative reactor design – that is the specialty of Timothy Noël, assistant professor at Eindhoven University of Technology. He worked towards this goal with both Veni and ECHO grants, and has just been awarded a 2.25 million euros grant from the European Marie Curie ITN programme. He will use this grant for his project Photo4future, which focuses on visual light photochemistry.

'Many chemical reactions in pharmaceutical industry are in fact quite problematic', says Noël. 'They either require really high temperatures, or they use toxic reagents, yielding harmful by-products. By using visible light photoredox catalysis, we avoid both problems – the reactions have a higher selectivity, and they can be performed at room temperature.' Visible light, however, does not penetrate deep into the reaction medium. Noël therefore works with specially designed microreactors, consisting of very thin, transparent capillaries. 'Reactions that typically cost 24 hours, now take place in minutes or even seconds', he says.

This work, as he underlines, bridges the gap between engineering and chemistry – quite unique within this scientific field. 'It allows us to improve the actual chemical reactions', he says, 'and scale up the process. This is really important for the industrial partners that we work closely together with.' One of these partners is Corning, one of the world's leading innovators in materials science.

In spring 2015, Noël was awarded his next NWO grant: a Vidi for his research on visual light photochemistry.



Specially designed microreactors use visible light to trigger chemical reactions.