

Using viruses as building blocks in functional materials

Jeroen J.L.M. Cornelissen¹

¹MESA+ Institute for Nanotechnology, University of Twente, Enschede, the Netherlands

ABSTRACT

Protein cages are common structures in biology that can have profoundly different functional properties. The majority of these icosahedral organized particles is found in viruses, structures designed to hijack the molecular machinery of the host cell, while in a variety of bacteria these protein cages have organelle-like functions. In our group we aim to design and control the assembly of proteins into materials of well-defined nano-scale dimensions, to use these e.g. as a nanoreactor and scaffolds for functional materials. For this we employ techniques from biomolecular engineering with tools from supramolecular and polymer chemistry.

The novel properties introduced to these biological nanostructures combined with the enormous variety protein assemblies can form, has led to the firm believe that new materials with interesting, chemical, physical and biological properties are accessible.

BRIEF CV



www.utwente.nl/tnw/bnt

Jeroen Cornelissen is Professor in Organic Chemistry and Chair of the Laboratory for Biomolecular Nanotechnology at the MESA+ Institute for Nanotechnology, University of Twente, in the Netherlands. He studied chemistry in The Netherlands with a minor in polymer chemistry carried out at the Eindhoven University of Technology with Prof. E.W. Meijer and a major in Supramolecular Chemistry and Catalysis at the University of Nijmegen with Prof. R.J.M. Nolte. He received his PhD (cum laude) from the latter university in 2001 for research carried out under the supervision of Prof. R.J.M. Nolte. After post-doctoral work at the IBM Almaden Research Center in San Jose, U.S.A. he returned to Nijmegen, where he was appointed as an Assistant Professor until 2009. Cornelissen is the recipient of, amongst others, an EURYI Award, an ERC Consolidator Grant and the Gold Medal of the Dutch Royal Chemical Society. His current research interests are in well-defined polymer architectures, hybrid systems of synthetic macromolecules and biopolymers and the use of viruses as building blocks in functional materials. At present Prof. Cornelissen is the Deputy-Editor-in-Chief of the *Journal of Materials Chemistry B* published by the RSC