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- VPs *see* viral particles
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“A timely and well-presented treatise on the evolving use of biological assemblies for nanocarriers of enzymes with potential applications in catalysis and the delivery of enzyme therapeutics. In seven chapters the expert authors describe the utility of viruses, polymersomes and DNA origamis. The book will be of great value not only to the specialist but also to others with a general interest in the broader field of bionanotechnology.”

Prof. David J. Evans
University of Hull, UK

Enzyme immobilization on solid supports has been considered for a long time as an attractive solution to perform sophisticated organic synthesis, which is required in the preparation of fine pharmaceutical chemicals. But in the late 1990s, the tremendous progress in molecular biology fundamentals opened up the possibility of feeding a toolbox for building new bioinspired nanotechnologies. Among them is the goal of repositioning biocatalysts in environments mimicking their genuine working place—the cell.

The research presented in this book was selected among the most impressive achievements in the fields of enzyme bioconjugation and bioinspired nanosupports. It opens up potential applications in nanocatalysis and for lab-on-a-chip and biosensor devices, drug delivery vectors, and nanometrology. Most of the supports described pertain to soft materials (cells, virus, polymers, DNA) and most of the examples benefit from the amazing properties of proteins and DNA to self-assemble, according to the “bottom-up law,” a specific feature of all living systems. The enzyme nanocarriers also have the potential to be grafted on solid supports through “top-down” technologies, spanning orders of magnitude from the nano- to the mesoscale and above. The book is a rich source of inspiration for researchers seeking to build smart materials requiring nanoscale positional control of functional proteins on various carriers.



Daniela Cardinale is postdoctoral researcher, since 2010, at the French National Institute of Agricultural Research (INRA), France, where she has integrated Dr. Thierry Michon’s team and investigated different strategies aiming to a positional control of enzymes on viral particles. She was awarded a PhD in biochemistry at the University of Modena and Reggio Emilia, Italy, in 2009. She was an invited team member of the Laboratory for Optics and Biosciences in Palaiseau, École Polytechnique, France, between 2007 and 2009.



Thierry Michon is project leader at INRA since 2001. He was awarded a PhD in enzymology at the University of Aix-Marseille II, France, in 1992. In 1993, he accepted a position of researcher at INRA in Nantes. Between 1998 and 2001 he was an invited scientist at the California Institute of Technology and worked in close collaboration with Prof. D. Tirrell. His current research focuses on possible correlations between virus evolution and the intrinsic disorder found in viral proteins and the development of virus-based enzymes nanocarriers (ENCs) for nanotechnology applications.



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