



**Dr. Massimo Morbidelli**  
**Professor for Chemical- and Bioengineering, ETH Zurich, Switzerland**

**Abstract**

**Continuous Chromatography for Purification of Monoclonal Antibodies from Cell Culture Supernatant**

In the production of monoclonal antibodies (Mabs), increasing fermentation titers pose a challenge for downstream processing. The demand for higher loads and throughput has triggered a search for alternatives to the state of art affinity-based purification. The use of cost-effective stationary phases and gradient chromatography presents an option, particularly in combination with multicolumn continuous chromatographic processes (MCSGP). The application of these techniques is shown with respect to Mab purification. Continuous processes allow for high yield and productivity. HCP clearance was found to be in some cases comparable to affinity purifications and in general one order of magnitude larger than in batch processes.

**Biography**

Massimo Morbidelli, Prof. ETH, PhD, received his PhD in Chemical Engineering at the University of Notre Dame (USA) in 1986. After his first appointments as professor at the University of Cagliari (Italy) and Politecnico di Milano, he is since 1997 Professor at the Institute for Chemical and Bioengineering at ETH Zurich. Massimo Morbidelli is co-author of more than 300 papers, 11 international patents and four books. He serves as a member of the Editorial Board of several international scientific journals and is a member of the Scientific Advisory Board of the Max-Planck Institute for Dynamics and Complex Technical Systems, Magdeburg, Germany. He is the recipient of the 2005 R.H. Wilhelm Award in Chemical Reaction Engineering of the American Institute of Chemical Engineers. In the area of preparative chromatography, Massimo did pioneering work for the spreading of SMB-technology as purification process in the pharmaceutical industry. His research group in preparative chromatography belongs to the leading groups in the world. Since 2007, Massimo is President of ChromaCon Ltd., a spin-off company from his research group. ChromaCon Ltd. brings new chromatographic processes (MCSGP-technology) for the purification of proteins and peptides to the market.