UCLA ENGINEERING
Chemical and Biomolecular Engineering

SEMINARS IN CHEMICAL AND BIOMOLECULAR ENGINEERING

Friday, April 20th, 2018 | 10:00AM Boelter Hall 3400

Presented by:

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"Downstream Purification of Biopharmaceuticals: Challenges and Opportunities"

The biopharmaceutical industry is facing demands for cost reductions in medications in developed countries with aging populations, as well as in developing countries with growing middle classes. The advent of biosimilars has led to increased competition from other countries. In addition, regulatory constraints require enhanced potency, efficacy and safety while there is a need for rapid approval and deployment of life-saving vaccines, and novel gene-based and stem cell-based therapeutics.

There is a great deal of interest in the development of novel downstream processes to accelerate production, reduce process steps, process footprint, buffer and energy use, and regulatory burdens. Single use devices, low cost affinity media, membrane chromatography, process intensification, in-line validation and other approaches are being explored. Our group has pioneered the use of synthetic peptide libraries for the identification of low cost ligands with high affinity and selectivity for a wide variety of protein targets. In addition, we are pursuing inexpensive, high-throughput, high binding-capacity non-woven membranes as solid supports for product or contaminant capture. These developments might enable "truly continuous" purification strategies based on flow-through separation steps relying completely on disposable membranes.

Ruben G. Carbonell is the Frank Hawkins Kenan Distinguished Professor of Chemical and Biomolecular Engineering at NC State University. He is on temporary leave as Executive Director of the Biomanufacturing Training and Education Center (BTEC) to serve as Chief Technology Officer of the National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL). He is also Director of the Kenan Institute for Engineering, Technology & Science, which supports multi-disciplinary and multi-institutional research, educational, entrepreneurial and public policy programs.

Dr. Carbonell is a member of the National Academy of Engineering. He is a Fellow of the National Academy of Inventors, the American Institute of Chemical Engineers, and the Industrial and Engineering Chemistry Division of the American Chemical Society. Dr. Carbonell is a Foreign Member of the Slovenian Academy of Sciences and the Academy of Sciences of the Institute of Bologna. He has published over 240 technical papers and is an inventor in over 30 patents. Prof. Carbonell received his BS degree in Chemical Engineering from Manhattan College in 1969 and his PhD from Princeton University in the same area in 1973.