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PLENARY SPEAKER

ABSTRACT

Monday, October 2nd 10:00 – 11:00 - Main Auditorium

Title: Evolution of Process Systems Engineering and Future Trends in Research



Ignacio E. Grossmann, Rudolph R. and Florence Dean
University Professor.

In this talk, we first give a brief historical account of the evolution of the area of Process Systems Engineering. Starting with the pioneering vision of Professor Roger Sargent and the pioneering book by Professor Dale Rudd in the 1960's, we briefly summarize the major developments and advances that have taken place over the last 50 years in process simulation, process control, optimization, process synthesis and process operations. We highlight in each of these areas the key concepts and contributions that have emerged. Furthermore, will show that many of these developments, which have a strong

foundation in fundamentals of chemical engineering, numerical analysis, systems and control theory, mathematical programming, computer science and management science, have had significant impact in industry. Next, we outline some of the future research challenges in Process Systems Engineering. These include energy systems, sustainability, process intensification, smart manufacturing, materials design, and systems biology. Aside from leading to challenging research problems that might benefit from new tools like big-data and machine learning, we argue that progress in future research areas will still rely on research advances in the basics and fundamentals of Process Systems Engineering.

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