

CHEMICAL & BIOMOLECULAR ENGINEERING

Center for Biomufacturing
Science & Technology

CBST SEMINAR

THURSDAY | APRIL 11, 2019

1:00 P.M.

366 COLBURN LAB



Jennifer McManus

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“The Physical and Chemical Factors Driving Protein Self-Assembly”

Controlling the self-assembly of biological molecules to form defined or functional structures with a high degree of predictability is a central aim for soft matter science and biological physics. While this is possible for a variety of colloidal and nanoscale materials, it has been more difficult to achieve for proteins. In large part, this is due to the complex nature of the protein surface, which influences the assembly process. Understanding this complexity is essential to reveal the mechanisms underlying important processes such as protein crystallization, the pathogenesis of protein condensation diseases, the aggregation of proteins during industrial manufacture and the formation of protein based materials. Using phase diagrams for human gamma D-crystallin (a protein found in the human eye lens), I will show that both mutagenesis and chemical modification of the protein surface can have a dramatic impact on anisotropic protein-protein interactions and hence the phase behaviour of the protein.

Dr. McManus is the Head of the Department of Chemistry at Maynooth University. She completed her undergraduate degree in Chemistry at University College Dublin and stayed there for her PhD studies under the supervision of Prof. Kenneth Dawson. During her Ph.D. she also spent time in the group of Prof. Joachim Raedler at the Max Planck Institute for Polymer Research in Germany. After completing her Ph.D., she spent one year as a postdoc at the University of Fribourg, Switzerland before moving to a postdoctoral associate position at MIT, in the lab of George Benedek. In 2008 she returned to Ireland as a Science Foundation Ireland Stokes Lecturer in the Department of Chemistry at Maynooth and was promoted to Head of Department in 2017.



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