# BARLEY STRIPE MOSAIC VIRUS-LIKE PARTICLES AS BIOTEMPLATES FOR MINERALIZATION OF METALLIC NANOPARTICLES

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**Abstract:** Bottom-up nanofabrication via templating on naturally occurring biomolecules (biotemplating) is a promising strategy for nanomaterial synthesis as the products are frequently more uniform and less polydisperse. Plant virus capsid proteins are particularly attractive as the biotemplate structure is genetically encoded, easily manipulated via synthetic biology to tune template morphology and surface functionality, and generally considered as safe. Here, I will provide a brief overview of our work with barley stripe mosaic virus-like particles (VLPs), which form nanorods with tunable aspect ratio. We have pioneered the recombinant expression of these proteins in *E. coli*, forming nanorods that are more readily coated with noble metals. This recombinant platform also enabled further engineering to enhance biotemplate stability over a wide range of processing conditions and tailor surface functionality to tune the metal coating process. Our work introduces a new biotemplate for nanomaterial synthesis and presents exciting new opportunities for development in a number of fields such as energy storage, sensing, catalysis and nanomedicine.

***Bio:*** Dr. Kevin Solomon is an Associate Professor of Chemical & Biomolecular Engineering at the University of Delaware. He holds a bachelor's degree in chemical engineering and bioengineering from McMaster University (Canada), an MS in Chemical Engineering Practice from MIT, and a PhD in Chemical Engineering from MIT. He has been recognized with multiple awards for research, teaching, and service including a US Department of Energy Early Career Award (2019), an NSF CAREER Award (2022), the SIMB Early Career Award (2022), the Lloyd N. Ferguson Young Scientist Award from NOBCChE (2023) and the AIChE Division 15 Early Career Award (2023). He has provided expert testimony before the 116th US House of Representatives on the convergence of engineering and biology and has coauthored several technology roadmaps for engineering biology. His work focuses on developing proteins and microbes for applications in sustainability, materials, and health.