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# EFFICIENT OPTICAL AND MECHANICAL RESPONSES OF A HYDROPHOBIC ASSOCIATION HYDROGEL

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**Responsive hydrogels are cross-linked soft matter, capable of change in a physical property upon encountering certain stimuli or changes in surrounding conditions. These hydrogels are promising for a wide variety of applications including controlled drug delivery, wound dressings, contact lenses, soft robotics, and tissue engineering. Notwithstanding, some responsive and functional properties compromise the mechanical properties of the hydrogels. Therefore, strategies that produce hydrogels with improved mechanical properties and multiple responses continue to be in high demand despite several advances in the field. Hydrophobic associations, such as dynamic crosslinks, offer a unique strategy to achieve hydrogels with efficient stimuli responses and significant mechanical strength. Moreover, the simple supramolecular interactions within a hydrophobic association hydrogel can produce synergistic effects in the stimuli responsive behavior. This presentation will discuss some of our recent work in designing and creating highly efficient responsive hydrogels based upon simple supramolecular architectures, such as hydrophobic associations. Such strategies offer benefits including facile preparation of self-healing hydrogels, over 95% enhancement in thermoresponsive light modulation than a conventional system, and a unique soft-stiff thermo-mechanical behavior.**

## Biography

Silas Owusu-Nkwantabisah is a Research Scientist in the Materials Interfacial Science Department of the Kodak Research Laboratories, Rochester, New York. He received his PhD in Chemistry from the University of Maine under Professor Carl Tripp. Before joining Kodak in 2015, he was a Post-doctoral Associate with Professor Alan Lesser in the Polymer Science and Engineering Department at the University of Massachusetts Amherst. His research interests include responsive polymers, soft matter, surface and colloid chemistry, polymer processing (supercritical $CO_2$ and melt extrusion), advanced composites and stereolithography.

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