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Engineering of 2D and 3D nanostructured hybrid composites for enhanced mechanical properties

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We can learn how nature produces hierarchical micro-nanostructures for realization of specific functions. Superb mechanical properties as well as unique optical properties can be distinguished examples. These examples have inspired researchers to develop and design new artificial materials. Structural organization with parallel stacking of nanosheets was found in internal structure of nacre of abalone shell and it presents strong and tough mechanical properties. On the other hand, the vertically orientation of nanostructures are also ubiquitous in biocomposites such as teeth and seashells. In this presentation, two types of nanocomposites will be presented, planar shaped nanocomposites with silica layer and vertically oriented nanocomposites with ZnO nanopillars. We demonstrated that 2D and 3D structural organization of nanomaterials can show enhancements of mechanical properties which can exceed limit of conventional nanocomposites.

Biography

Bongjun Yeom has completed his PhD from Seoul National University and Postdoctoral studies from University of Michigan, USA. He is currently working at Department of Chemical Engineering in Myongji University as an Assistant Professor. He has published more than 25 papers in the research fields of nanocomposites and plasmonic nanomaterials.

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