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### **Functional 3D Materials Integration by Folding and Assembly**

There is a growing understanding that, for many important classes of technology, form can beget function. In this lecture I will present examples taken from current collaborative programs of research at UIUC that demonstrate the value of this idea as a principle for motivating both the designs and means for fabricating advanced functional devices with diverse applications in sustainable technologies. I will describe specific examples of recent progress made in the science of self-folding materials architectures, ones with useful properties for light harvesting and management, and the direct exploitation of these structures in photovoltaic energy generation—an approach to an effective origami of advanced materials that flexibly interconnects multiscale architectures most effective in shaping solar light harvesting to those of the advanced electronics most efficient in converting it to electrical power.