Information on a Small Scale: The Power of Nanophotonics

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ABSTRACT

In 1959, Richard Feynman marveled at the “plenty of room” still available to accommodate enormous amounts of information in an exceedingly small space. Fifty years later, we inhabit a world dense with information provided by complex electronic circuits and the uncoding of the genome. Information on a small scale will also benefit from dramatic advances that have been made in modulating light in nanoscale (or smaller) structures. These provide ways to generate single photons on demand, allow formation of exceedingly efficient optical sources, and give rise to new quantum mechanical states of light coupled with matter. This talk will illustrate some of the opportunities available with nanophotonic structures formed in semiconductor materials.