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J E Pina* (jep.xyz@gmail.com). *Optimizing Plasmonic Effects for a More Efficient Nanoscale Biophotovoltaic Device.*

Biophotovoltaics utilize biological components from photosynthetic systems for the normal charge separation process in a photovoltaic device. The promise of such devices is great, as they are highly efficient in their biological environment at converting photons into free charge. However when utilized in artificial photovoltaic devices, their efficiency is quite low, even when compared with conventional solar cells. One way to increase their efficiency is to use plasmonic effects to augment the intensity of incident light in the charge separation area. Plasmonic effects occur when electromagnetic waves at a conductor-dielectric interface cause the oscillation of free electrons relative to the atomic lattice, allowing the electrons to act as a plasma. In our current computational study, we are investigating the use of plasmonic effects with silver and gold to optimize the delivery of light to a film of bacterial photosynthetic reaction centers in an attempt to increase the efficiency of a biophotovoltaic nanodevice. (Received September 21, 2011)