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**COHERENT EXCITON-POLARITON MODEL FOR PHOTO-SYNTHETIC ENERGY TRANSFER** RICHARD SQUIRE, West Virginia University - Institute of Technology, NORMAN MARCH, Oxford University and University of Antwerp, JAMES INGLES, West Virginia University - Institute of Technology — If a bacterial photosynthetic light-harvesting complex absorbs a photon, the energy transfer to a charge separation complex some distance away is nearly perfect. This process has been described as coherent excitons, but we suggest that the mass is too high for this to occur at room temperature. Alternatively, we have presented a new photosynthetic model based on the existence of a reduce mass by combining photosynthetic excitons with photons to form a condensate called a polariton [1, 2]. Lidzey et al have recently reported strong polariton coupling between isolated photosynthetic chlorosomes and confined optical photons in a microcavity [3]. Here we discuss an expanded model which provides explanations for experimental measured extended coherence lifetimes and suggest that polaritons may have been already experimentally observed in native bacteria.

[1] J. J. Hopfield (1958) Phys. Rev. **112**, 1555.

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