

T_CSUH Bi-Weekly Brown Bag Seminar

Texas Center for Superconductivity
University of Houston



Prof. Eric Bittner

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“Does DNA act as it’s own sunscreen?”

Friday, July 7, 2006

Room 102, University of Houston Science Center

12:00 Noon – 1:00 p.m.

Abstract

DNA is a surprisingly robust molecular system in spite of its rather large UV absorption cross-section in the 310-290 nm range. Part of this robustness comes from DNA’s ability to rapidly dissipate the electronic photoexcitation energy into heat, thus preventing to some extent photochemical processes that can lead to mutation. One of the key questions is whether or not this dissipation is due to base-pairing and hydrogen transfer in localized excited states or if it is due to base-stacking effects. In this talk, I shall give an overview of our two-band lattice model for the excited states of DNA double helices. Our theoretical calculations corroborates recent ultrafast experimental results that indicate that base-stacking dictates the fate of an excitation in A-T DNA. Moreover, our work suggest that in AT DNA, excitonic dynamics along the A chain is dramatically different than along the T chain. Finally, we speculate that these processes may have played a crucial role in the evolutionary selection of DNA.

Bio

Prof. Eric Bittner received the B.S. degree in Chemistry and Physics from Valparaiso University in 1988, and the Ph.D. in Chemistry from the University of Chicago in 1994. He was an NSF Postdoctoral Fellow at the University of Texas at Austin and Stanford University. He joined the UH faculty in 1997 as Assistant Professor, and was promoted to tenure in 2003. He is currently Associate Professor of Chemistry. He received an NSF Career Award in 1999.

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