

A COMPARATIVE STUDY OF THE PHOTOPHYSICAL PROPERTIES OF CARBAZOLO- AND DIPHENYLAMINO-BASED HETEROCYCLOPHANES. E.A. HERNBERG, A.J. WAGENHALS, D. GAGNON, M.J. NOVAK, A.B. BROWN, J.C. BAUM. Department of Chemistry, Florida Institute of Technology, 150 W. University Blvd., Melbourne, FL 32901

In earlier work, we showed that heterocyclophanes can be applied to developing molecular sensors based on fluorescence quenching mechanisms observed in hydrogen-bonded systems. Carbazole fluorescence can be quenched by pyridine within a hydrogen-bonded complex via a charge-transfer mechanism. We previously demonstrated that quenching occurs in the heterocyclophane 2,18-dithia[3](1,8)carbazolo[3](2,6)pyridinophane (CP) whose structure favors an internal hydrogen-bond; disruption of the hydrogen bond restores fluorescence. We have recently characterized the fluorescence quenching of diphenylamine by pyridine, and studied the behavior of this system within the heterocyclophane structure of 2,18-dithia[3](2,2')diphenylamino[3](2,6)pyridinophane (DP). Presented here is a comparative analysis of the quenching processes observed in the carbazole/pyridine and diphenylamine/pyridine emitter-quencher pairs within CP and DP.