

## ALAN B. BROWN

Department of Chemistry  
Florida Institute of Technology  
150 W. University Boulevard, Melbourne, FL 32901 USA

### EDUCATION

- Ph.D., University of Wisconsin-Madison, 1986
- B.A., Middlebury College, 1979

### ACADEMIC EXPERIENCE

1994 to date, Associate Professor of Chemistry, Florida Institute of Technology  
1988 to 1994, Assistant Professor of Chemistry, Florida Institute of Technology

### RESEARCH INTEREST

Molecular design in organic chemistry. Dr. Brown is interested in the structural bases of chemical phenomena such as aromaticity, molecular recognition and the transduction of electronic signals. His group designs molecules that test various structural ideas, makes the molecules and tests the hypotheses experimentally and theoretically.

### PROFESSIONAL EXPERIENCE

Dr. Brown was an NIH postdoctoral fellow at Columbia University from 1986 to 1988 and came to Florida Tech in 1988. All of his work has been in physical-organic chemistry, with emphasis on structure/function interrelationships.

### SELECTED PUBLICATIONS

- P. Kiprof and A. B. Brown. "A G2 Level Study of Monosilabenzene, Monogermabenzene, and Their Dewar Benzene and Prismane Isomers;" *Internet J. Chem.* 1999, 2, 23. URL: <http://www.ijc.com/articles/1999v2/23>.
- A. B. Brown, P. Kiprof, S. E. McKay and I. Beros. "The Structure of Hexamethyl Dewar Benzene, Revisited by *Ab Initio* Theory;" *Internet J. Chem.* 1998, 1, 18. URL: <http://www.ijc.com/articles/1998v1/18>.
- A. B. Brown, S. E. McKay and P. Kiprof. "An *Ab Initio* Study of Annulation Effects on the Valence Isomerism of Benzene;" *J. Mol. Struct. (Theochem.)* 1997, 419, 185-189.
- A. B. Brown, S. E. McKay and D. E. Meeroff. "Scope and Stereochemistry of [2+2] Photocycloadditions between Cyclopentenones and 1,2-Dichlorocycloalkenes;" *Synth. Commun.* 1997, 27, 1989-2011.
- S. E. McKay, P. Kiprof and A. B. Brown. "The Effects of Annulation on Cyclobutadiene Bond Alternation: A Comparative Study of Semi-Empirical and *Ab Initio* Methods;" *J. Mol. Struct. (Theochem.)* 1996, 368, 197-204.
- A. B. Brown, C. W. Chronister, D. M. Watkins, R. J. Mazzaccaro, S. R. Rajsiki, M. G. Fountain, S. E. McKay and T. L. Gibson. "Dichotomous Reactivity of  $\text{PCl}_5$  and  $\text{PBr}_5$  Toward Cyclic Ketones; A One-Step Preparation of 1,1,2-Trichlorocycloalkanes;" *Synth. Commun.* 1995, 25, 485-501.

**Proposed CUAP Research Area:** *Green Chemistry and Plastics Additives.* The proposed collaboration between Professors Gordon Nelson and Alan B. Brown (Department of Chemistry, Florida Tech) and Professors Gyorgy Marosi and Gyorgy Keglevich (Department of Chemical Technology, BUTE) is based on their former scientific contacts. This collaboration will focus on environmental issues in the areas of materials science and chemical technology as follows:

- There is need for new additives which enhance biodegradability, biocompatibility and recyclability of polymers. This project will involve the synthesis and studies of the applicability of new additives for forming multicomponent, recyclable, biodegradable, or biocompatible polymer systems that enhance polymer properties. The additives will include compatibilizing agents, processing aids, and flame retardants.
- There is need for "green chemistry" in organic synthesis. This project will focus on the elaboration of new methods of organic synthesis which will reduce their environmental impacts (reduce harmful side products, solvents, etc).
- There is need for better computer controlled technologies to reduce environmental impacts of chemical processes. This project will develop new process control algorithms for the organic chemical industry to reduce the formation of harmful byproducts using a computer controlled model reactor.
- In the second year a conference will be held in Budapest to highlight developments in modification of polymers for environmental use resulting from this project (flame retarded, biodegradable polymers etc.) to area academics and industry.

*Principal Investigators:* BUTE, Drs. Gyorgy Marosi, Peter Anna, Gyorgy Keglevich, Department of Organic Chemical Technology. Florida Tech, Drs. Gordon L. Nelson, and Alan B. Brown, Department of Chemistry.

*Project Costs:* Year 1: 3500 USD; Year 2: 7000 USD; Year 3: 3500 USD