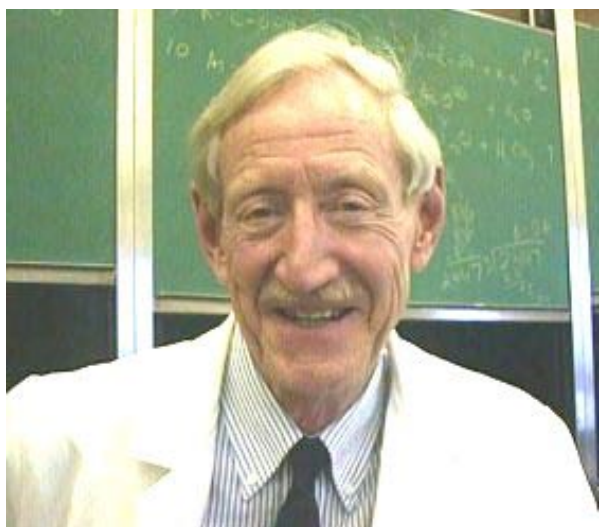
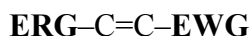


Daryl L. Ostercamp



Daryl L. Ostercamp came to Concordia College in 1960, fresh from a year of post-doctoral study at Penn State. He received a B.A. from Saint Olaf (1953), M.S. from University of Wisconsin (1955) and Ph.D. in organic chemistry from the University of Minnesota (1959). Sabbaticals include a year in Iraq as a Fulbright professor, a year in England as an NSF Science Faculty Fellow, three years in Saudi Arabia as Professor of Chemistry, and a year each as Adjunct Professor at the University of Florida and Bar-Ilan University in Israel. His work has been supported by grants from Research Corporation and National Science Foundation, along with Bush and Centennial Scholar stipends from Concordia. In 1999 he was honored with the Flaar Distinguished Scholarship Award and is the current holder of the Nere Sundet Endowed Chair in Chemistry.

Over the years my students and I have prepared many model compounds of the type:

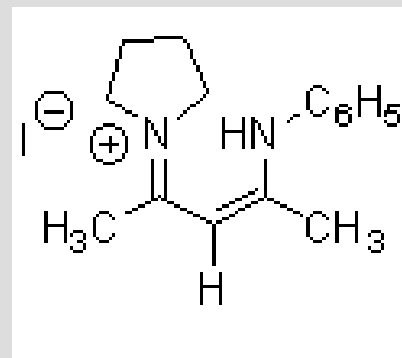


where **ERG** is the acronym for electron-releasing group, and **EWG** for electron-withdrawing group. In every instance thus far an sp^3 nitrogen (a p-electron pair donor) has served as the **ERG**. **EWG** groups have included carbonyl ($\text{C}=\text{O}$), nitro (NO_2), and imino ($\text{C}=\text{N}$), each of which functions as a π -type electron pair accepting group. All of our model compounds qualify as conjugated systems.

Publications showing our work have appeared in the United States, Great Britain and Germany. A major thrust has been the correlation of structure with spectroscopic properties. Significant contributions have been made to the ultraviolet spectroscopy of vinylogous amides and the infrared spectroscopy of nitroenamines. Additional papers in ^1H NMR and mass spectroscopy from our laboratory are also part of the scientific literature.

Selected Publications:

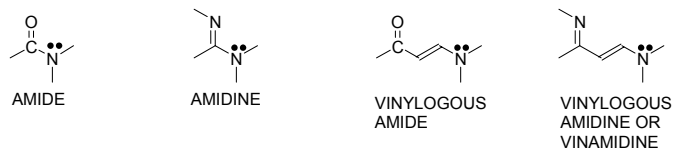
- A. Hassner, E. Ghera, T. Yechezkel, V. Kleiman, T. Balasubramanian and D. L. Ostercamp, " Stereoselective and Enantioselective Synthesis of Five-membered Rings via Conjugate Additions of Allylsulfone Carbanions," *Pure Appl. Chem*, **72**, 1671 (2000).
- D. L. Ostercamp and S. Wiles, " The Synthesis and Crystal Structure of 2,6,9-Trimethyl-4,8-dinitro-2,6,9-triazabicyclo[3.3.1]nona-3,7-diene," *J. Hetero. Chem.*, **37**, 1357 (2000).
- D. L. Ostercamp, "Practical Origami in the Microscale Organic Lab," *J. Chem. Ed.*, **75**, 1456 (1998).



Research Projects

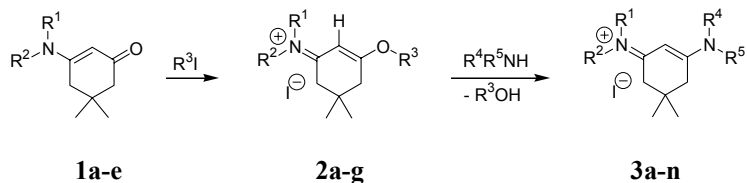
Synthesis of vinamidinium compounds

Our most recent work has focused upon the vinamidines and their protonated Conjugate acids (i.e., vinamidinium salts). Below are pictured several related structures with their family names:

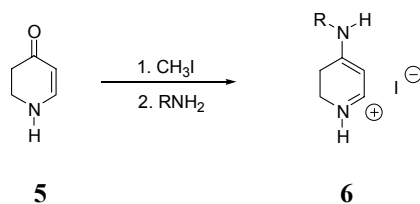


Electronic interactions between an **ERG** and an **EWG** permeate the chemistry of conjugated organic systems. Considerable evidence exists that vinylogous conjugation is considerably more effective than its contiguous correlate. For example vinylogous amides are much stronger bases than ordinary amides, and carbonyl stretching frequencies are noticeably lower for the extended system.

A versatile method for generating the vinamidinium cation framework (cf. **3**) involves the reaction of its vinylogous imidate counterpart (cf. **2**), with ammonia, a primary amine, or a secondary amine. In recent work, enamines **1a-d** derived from dimedone were used as starting materials, the six-membered carbocyclic ring ensuring a rigid “W” shaped core structure. In the course of characterizing products **2a-g** and **3a-n** via ^1H NMR, the presence of diastereomeric vinylogous imidate salts as well as rotameric vinamidinium salts was observed.



A new area to explore would involve 2,3-dihydro-4-pyridone **5** and its homologs. We can reasonably expect to prepare a wide variety of vinamidinium salts, each having the same core as compound **6**.



An intriguing challenge lies in determining the acid ionization constants of the various vinamidinium salts that we now have and expect to prepare in the future. Only a few isolated measurements in this area have been published. Overall the project offers ongoing opportunities for Concordia students to improve their skills in manipulation of equipment as well as learn new techniques. Much growth can also be experienced in the area of relating structures to chemical and physical properties. Students could expect to receive advanced instruction in the area of NMR spectroscopy. Experimenters at all stages of development are welcome. In May of 2002 I left the classroom and assumed the role of “Research Chemist in Residence.” A thirty to forty hour workweek in my research lab is the norm. Students are welcome to register for 0.25 to 1.0 course credit. I am open to working with one person, but would prefer to have a total of three to five active members of the research group.