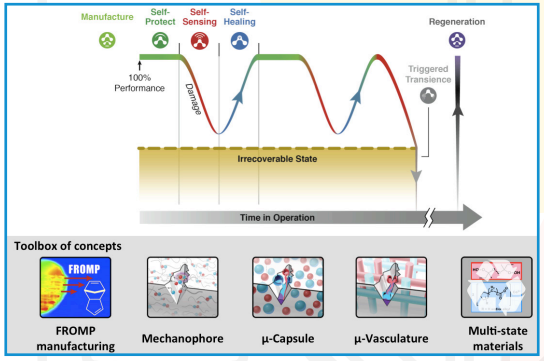
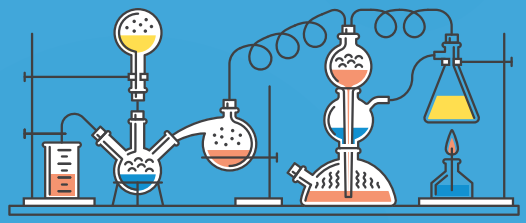
LECTURE ABSTRACT

In this talk I will discuss the molecular design of organic structural materials that mimic living systems' abilities to protect, report, heal and even regenerate themselves in response to damage, with the goal of increasing lifetime, safety and sustainability of many manufactured items. I will emphasize recent developments in frontal ring-opening metathesis polymerization (FROMP) to manufacture composites with minimal energy consumption. The talk will conclude by introducing the idea of morphogenic manufacturing in which we aim to achieve symmetry breaking in neat polymerization reactions through a coupled reaction-diffuse process; the longterm vision is self-patterned form and function in synthetic materials.



References:
1. Patrick, J.F.; Robb, M.J.; Sottos, N.R.; Moore, J.S.; White, S.R. Polymers with Autonomous Life-cycle Control, Nature, 2016, 540, 363-370.
2. Robertson, I.D.; Yourdkhani, M.; Centellas, P.J.; Aw, J.; Ivanoff, D.G.; Goli, E.; Lloyd. E.M.; Dean, L.M.; Sottos, N.



Questions and comments about the Dawson Lecture can be directed to *chemistry@uky.edu*

College of Arts and Sciences
Department of Chemistry

chem.as.uky.edu

The 25th Annual

LYLE RAMSAY DAWSON LECTURE

Established in memory of Lyle Ramsay Dawson Distinguished Professor and Former Head of the Department of Chemistry

POLYMERIC MATERIALS FOR LIFECYCLE CONTROL

Dr. Jeffrey S. Moore
Speaker Affiliation University of Illinois Urbana-Champaign

Friday, December 2, 2022 | 2 - 3 PM

WT Young Library:
UK Athletics Association Auditorium

Reception to immediately follow.

University of Kentucky

LYLE RAMSAY DAWSON

Lyle Ramsay Dawson was a native of Illinois and received his undergraduate degree from the University of Illinois in 1932. He received his Ph.D. degree in 1935 from the University of Iowa.

Dr. Dawson served in several academic positions in Illinois, Wisconsin, Nebraska and Louisiana and also worked on the Manhattan Project as a Research Chemist and Group Leader in the Metallurgical Laboratory at the University of Chicago. In 1946, he was awarded the War Department's Certificate of Merit and a U.S. Patent for his efforts on the Manhattan Project, which led to the discovery of a fundamental process for the extraction and purification of the elements plutonium and neptunium. He was a member of the committee that organized the Oak Ridge Institute of Nuclear Studies and was a council member of the Institute.

Professor Dawson came to the University of Kentucky in 1945 as Head of the Department of Chemistry. He provided key leadership in initiating and building the doctoral program in chemistry at the university. For example, in his first decade in the department, he individually obtained the major portion of extramural research support. During his twenty-five years with the department, he held contracts for fundamental chemical research with the U.S. Army, the National Science Foundation and the Atomic Energy Commission.

He directed or co-directed seventeen Ph.D. dissertations and nine M.S. theses. He was a talented research director and had a special ability to imbue his students with a concise, clear and complete scientific writing style. He published more than fifty research papers dealing with the chemistry of nonaqueous solutions and coauthored a reference book on the subject.

Dr. Dawson was a master teacher both in the classroom and in less formal conferences and discussions. His leadership and mentoring led many graduate teaching assistants and junior faculty members to become more effective teachers. His uncompromising devotion to high achievement standards in course-work, research, education and training set the tone for our department for years to come.

Another significant contribution to the department was Professor Dawson's indefatigable advocacy for a new chemistry building. His leadership in soliciting and designing a replacement for the former chemistry building, Kastle Hall, culminated in the opening of the current Chemistry-Physics Building in 1963.

He also served the campus community in other ways. Dr. Dawson was elected a Distinguished Professor in the College of Arts and Sciences in 1954—1955, and was appointed to the rank of Distinguished Professor in the field of Physical Chemistry by the University of Kentucky Board of Trustees in 1956. He served as Acting Dean of the Graduate School in 1954—1955, 1956 and 1960—1961.

Dr. Dawson's contributions outside the university were well recognized. He was a Fellow of both the American Institute of Chemists and the American Association for the Advancement of Science. He was a member of the American Chemical Society, Electrochemical Society, Sigma Xi, Omicron Delta Kappa, Alpha Chi Sigma and Kappa Delta Pi, serving leadership roles in each of these organizations. He served several times as a Tour Lecturer and Visiting Scientist under the sponsorship of the American Chemical Society. He was also active in a variety of other nonacademic organizations.

Dr. Dawson's twenty-five years in the department represent a truly outstanding combination and balance of administrative leadership, teaching, research and service. Although Dr. Dawson passed away in 1976, his impact on the department continues to this day. The endowment of the Lyle Ramsay Dawson Lecture Series by his beloved daughter, Venita Dawson Curry, permits us to rejoice in this legacy and to continue our tradition of world-class chemical research.

JEFFREY S. MOORE

- **B.S. (Chemistry) & Ph.D. (Mathmatical Sciences & English) UIUC**
- **NSF PostDoc (Bob Grubbs, CalTech).**
- **Stanley O. Ikenberry Endowed Chair**
- **Prof. of Chemistry**
- **Prof. of Materials Science & Engineering at UIUC.**

Jeff is a member of the Nat'l Acad. of Sciences, AAAS, ACS, and an Amer. Acad. of A & S fellow. He served as assoc. editor for JACS for 14 years. He has published >400 articles ranging from classroom tech to shape-persistent macrocycles, self-healing and mechanoresponsive materials. His service as Director of the Beckman Institute for Adv. Sci. & Technology earned the Exec. Officer Distinguished Leadership Award.

Honors include:

- Howard Hughes Medical Institute Professor
- ACS Edward Leete Award in Org. Chem.
- RSC's Mat'ls Chem. Div. Stephanie L. Kwolek Award
- ACS Nat'l Award in Polymer Chem.
- Sec. of Energy Honor Award, Achievement Award
- Campus Award Excellence in Undergrad Teaching.