

PYRROLIC MACROCYCLES: ADVENTURES IN SELF-ASSEMBLY AND FUNCTIONALIZED MATERIALS

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This presentation will provide a summary of our recent efforts to create receptors for ion pairs and their incorporation into responsive small molecules and materials. Particular emphasis has been placed on the development of pyrrolic and other macrocyclic systems that permit the specific recognition and competitive extraction of hard ions, such as the lithium cation and the hydroxide and carbonate anions. Studies of softer ions, such as the cesium cation, as an ion pair component have also been carried out. Using ion pair recognition, an effort has been made to control structure beyond the first coordination sphere. This has been done by creating systems whose polarity and hence morphology changes as a function of ion recognition, allowing for control over, e.g., micelle formation. Toward this end, responsive polymeric systems that permit the capture of dianions and hydroxide anion have been the subject of attention. Separately, several responsive recognition systems have been prepared with the view to being able to bind and release complex anions that have traditionally proved difficult to capture using synthetic receptors, including halide anion salts of lithium and various hydroxide anion salts. The creation of gels for ion capture is a topic of current interest and new results relating to those efforts will be presented as appropriate. Finally, recent efforts involving the use of ion recognition materials to encode information will be presented as time permits.

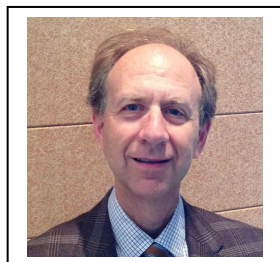
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Biography



Prof. Jonathan L. Sessler was born in Urbana, Illinois, USA on May 20, 1956. He received a B.S. degree (with Highest Honors) in chemistry in 1977 from the University of California, Berkeley. He obtained a Ph.D. in organic chemistry from Stanford University in 1982 (supervisor: Professor James P. Collman). He was a NSF-CNRS and NSF-NATO Postdoctoral Fellow with Professor Jean-Marie Lehn at L'Université Louis Pasteur de Strasbourg, France. He was then a JSPS Visiting Scientist in

Professor Tabushi's group in Kyoto, Japan. In September, 1984 he accepted a position as Assistant Professor of Chemistry at the University of Texas at Austin, where he is currently the Doherty-Welch Chair. Dr. Sessler has authored or coauthored over 850 research publications, written two books (with Dr. Steven J. Weighorn and Drs. Philip A. Gale and Won-Seob Cho, respectively), edited two others (with Drs. Susan Doctrow, Tom McMurry, and Stephen J. Lippard, Placido Neri and Mei-Xiang Wang), and been an inventor of record on over 80 issued U.S. Patents. To date, Dr. Sessler's work has been featured on more than 50 journal or book covers. His current WoS H-index is 113. From 2008-2019 Dr. Sessler served as an Associate Editor for *ChemComm*. Dr. Sessler was a co-founder (with Dr. Richard A. Miller) of Pharmacyclics, Inc., which was acquired by AbbVie for \$21B in 2015. His texaphyrin technology is now the basis for a new company, OncoTex, Inc. Dr. Sessler has served as the co-organizer of several international conferences in porphyrin, supramolecular, and macrocyclic chemistry and numerous ACS symposia. In addition to English, he speaks French, Hebrew, and Spanish reasonably well, and knows a little bit of German, Japanese, and Korean. Dr. Sessler's work has been recognized with several awards, including the ACS Cope Scholar Award, the RSC Centenary Prize, the Southwest Regional ACS Award, the Molecular Sensors-Molecular Logic Gates Award, the CASE award, and the Hans Fischer Award. He is a member of the U.S. National Academy of Inventors and was named Inventor of the Year at The Univ. of Texas at Austin in 2016. Dr. Sessler received the 2018 Thomas Dougherty Award in Photodynamic Therapy from the Society of Porphyrins and Phthalocyanines. In 2019, he received the C. David Gutsche Award in Calixarene Chemistry and the Foreign Associate Award of the Asian Society for Porphyrins and Phthalocyanines. Dr. Sessler was elected a member of the European Academy of Sciences in 2019. That same year he was named The University of Texas Co-op Career Research awardee, which is the highest prize given for research at his home institution. In 2020 he received a Pioneer Award from The American Institute of Chemists and in 2021 he received the Ronald Breslow Award in Biomimetic Chemistry from the American Chemical Society. Dr. Sessler is a Fellow of the American Chemical Society, the Royal Chemical Society, and of the American Association for the Advancement of Science. He was elected to the US National Academy of Sciences in April of 2021.