

Stephen G. Weber

Stephen G. Weber is a Professor of Chemistry at the University of Pittsburgh. He received the BA in Chemistry and Biology from Case Western Reserve University and the PhD degree in Chemistry (with Honors) from McGill University in 1979. He began his career at the University of Pittsburgh in the same year.



The research interests of Weber and his research group are oriented towards making quantitative measurements in small volumes. He has developed the chemistry and fluidics to create selective detectors for peptides (with collaborator Mats Sandberg) and neurotransmitters (with collaborator Adrian Michael). These detectors rely on chemical reactions taking place after a high-resolution separation, and thus must be thoughtfully designed in order to avoid compromising the separations. He and his group have recently joined with synthetic organic chemistry colleagues at Pitt to take advantage of the group's skills in running reactions on a small volume scale in flowing streams. In a novel microreactor, catalysts can be screened for their efficacy in reaction volumes under one microliter in a high throughput fashion. Microextractions are also a subject of study within the research group. Here, polymer films (which may contain selective 'molecular receptors' that recognize targets by forming noncovalent associations with them) act as the organic phase in a two-phase extraction. These extractions can be used analytically or for physicochemical characterization of compounds. A challenging and important thread in this work is the investigation, and indeed discovery, of the range of noncovalent interactions occurring in fluoros liquids and a fluoros polymer (Teflon AF®). He and his group have established themselves as leaders in the relatively new field of single-cell electroporation. Brief exposure to an electric field renders living cells transiently porous, permitting entry and exit of molecules and ions. In this effort with Swedish collaborator Owe Orwar, he and his group are attempting to understand and control this process with the vision of analyzing the contents of single cells without harming them.

Prof. Weber has over 160 publications, 3 patents, and has given over 200 invited lectures at national and international meetings and universities. He has mentored 36 graduate students to the MS or PhD degrees (and currently has about 15 people in his research group). He has hosted 20 postdoctoral associates and six visiting professors. Since 1994 he has mentored 38 undergraduate students. He has been active in University service at the Departmental, Dean's, and Provost's committee levels. Recognition includes several named lectureships, election as Chair of the Gordon Research Conference on Bioanalytical Sensors, chair of the Pharmaceutical and Biomedical Analysis Conference, a three-year term on the Editorial Advisory Board of the journal *Analytical Chemistry*, membership on the first NIH review panel exclusively responsible for bioanalytical chemistry (Emerging Bioanalytical and Biophysical Technologies), and a Gold Medal from Assiut University (Egypt). In addition, Prof. Weber has been active in local society work, including a stint as Secretary of the Pittsburgh Section of the ACS, Chair of the Program, Publicity, and Short Course committees of Pittcon®, and a variety of positions within the Society for Analytical Chemists of Pittsburgh.