Dr. Don Olson

Olson received his B.S. degree in Chemistry in 1957 from Gonzaga University and his Ph.D. degree in Analytical Chemistry from Purdue University in 1961. In 1992, he founded Global FIA Inc. to develop and market new FIA technology. He now serves as CEO of the company.

Dr. Graham Marshall

Marshall received his B.SC degree from the Rand Afrikaans University and completed his M.Sc. and Ph.D. at the University of Pretoria under Prof Jacobus (Koos) van Staden. In 1995, Marshall joined Olson in Global FIA where he presently holds the position of President.

Dr. Duane Wolcott

Wolcott received his B.S. (1970) and Ph. D. (1973) degrees from Louisiana State University. He joined Global FIA in 1995 and currently serves as CTO of the company.

Zone Fluidics for Integrated Sample Preparation and Analysis

Zone Fluidics (ZF) emerged at Global FIA as an expansion of various flow-based technologies¹. In practical terms, ZF is an approach to sample handling where zones of fluid are shuttled between unit operations where different sample processing steps, including analysis, are automated. Examples of unit operations include, but are not limited to solvent extraction, sample filtering, dilution, enrichment, medium exchange, headspace sampling, de-bubbling, distilling, amplifying, hybridizing, reacting and matrix-elimination. The power and versatility of ZF lies in its ability to automate complex analytical tasks difficult or impossible to do otherwise.

In addition to the Zone Fluidics concept and technology, Global FIA's inventions include a host of components, unit operation devices, and software which enable ZF to perform a remarkable broad range of analytical applications. Some of the hardware and software are listed below:

milliGAT Pump – a bidirectional, high precision, virtually pulseless pump with a flow range that spans six orders of magnitude which is useful not only for FIA, SIA, and ZF, but also a broad range of applications beyond these fields.

FloZF software – this Windows-based software package allows powerful device control for a wide range of pumps, valves, and other devices and detectors employed in flow-based analysers. It also allows data collection and manipulation of the data to provide useful analytical information. Its compatibility and integration with Microsoft Excel allows for powerful experimental design and system optimization.



GloCel chemiluminescence detector – a novel design which is more sensitive and versatile than the conventional spiral pathway model in common use.

Self-cleaning online filtering system – this sampling system provides a means of extracting a particle-free sample from a heterogeneous process stream. The supporting fluidics manifold provides for continuous back flushing of one filter while the other is filtering sample allowing for self-cleaning.

Serpentine mixer – An advance over knotted reactors using a rigid plastic platen with multiple changes in flow direction has been implemented in the super serpentine reactor. Flow in such a reactor is known to reduce axial dispersion while ensuring good mixing of constituent fluid zones.

UV digester – this device combines uv radiation, heat and chemical processes in a single flow-through device. Any combination of these three digestion methods can be employed as required.

Micro-distillation cell – a heated miniaturized batch distillation cell allows the utilization of distillation procedures in a ZF manifold.

FloPro instruments are custom designed for ZF, SIA, and FIA and are useful for both R&D and analytical applications. In particular, models have been developed for use as Process Analysers, for carrying out measurements requiring various detectors. Recently, a unit was specifically designed for shipboard deployment for Chemical Oceanographers. A FloPro designed specifically for researchers is presently at an advanced stage of planning.

Global FIA, in conjunction with Lawrence Livermore National Laboratory, was selected by R&D Magazine as having developed one of the 100 most technologically significant new products in 2004 and was awarded an R&D100 award for its contribution to the development of an Autonomous Pathogen Detection System that depends heavily on Zone Fluidics.

¹ Graham Marshall, Duane Wolcott, and Don Olson, "Zone Fluidics in Flow Analysis: Potential and Applications", Analytica Chim. Acta, 499, 29 (2003)