



## **BIOFILM GROWTH REACTORS: The Drip Flow Reactor (DFR) and The **NEW!** Industrial Surfaces Bioreactor**

Many engineering principles go into reactor design for growing biofilms that represent the countless environments where they are found. Given that a stable biofilm cannot be maintained long-term in a closed batch system, open systems that provide fresh nutrients, such as, continuously stirred tank reactors (CSTR) or plug flow reactors (PFR), are necessary for biofilm studies. Standardized test methods for growing biofilm differ not only by reactor type (i.e., CSTR vs. PFR), but also by the shear forces generated in each reactor. In this workshop, two reactors will be highlighted—the low shear drip flow reactor (DFR) and the new cooling tower reactor, currently under development. ASTM E2647 Standard Test Method for Quantification of *Pseudomonas aeruginosa* biofilm grown using a drip flow biofilm reactor with low shear and continuous flow will be presented along with example modifications. The latest tool for biofilm research is a newly designed and manufactured reactor for studying biofilm grown under conditions intended to represent environments like those that might be found in cooling towers. Join us to learn more about these two biofilm growth reactor systems.