

## Biofilm Methods for Your Lab

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Standard methods development is the creation of laboratory protocols for the purpose of comparison, both within a single laboratory and among various laboratories. Researchers choose to use a standard method for various reasons. For instance, a standard method is useful for teaching proper laboratory protocol or monitoring equipment performance. The impetus for the development of many microbial standard methods, though, is efficacy testing for product registration with a regulatory agency such as the US Environmental Protection Agency (EPA) or the US Food and Drug Administration (FDA). The mission of the Standardized Biofilm Methods Laboratory at the Center for Biofilm Engineering is the development and validation of biofilm methods for growing, treating, sampling and analyzing biofilm bacteria. During this workshop, participants will go through each component that comprises the biofilm method. The workshop format will consist of an overview presentation of the most critical parameters of interest for each component, followed by small group activities where the participants can ask method-specific questions of the instructors. The biofilm growth methods presented will include the CDC biofilm reactor (ASTM Method E2562), drip flow biofilm reactor (ASTM 2647) and MBEC device (ASTM Method 2799). The treatment methods presented will include the Single Tube Method (ASTM Method 2871) and the MBEC method (ASTM Method 2799). The various sampling approaches used in all the ASTM methods will be discussed, with a particular focus on the various approaches laboratories follow for sonicating biofilm samples and how to obtain an optimal method for a laboratory's specific ultrasonic water bath. During the biofilm analysis portion of the workshop, the statistical attributes of repeatability, reproducibility, responsiveness and ruggedness of a standard method will be demonstrated using recent multiple-laboratory study results. Finally, a novel approach for quantifying these attributes from 3-D confocal laser microscope images of biofilm will be presented.