Method Validation across Disciplines: Biotechnology for Green Analytical Chemistry

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When we started working in the new field of genetic engineering 30 years ago, it was a struggle to explain our work to friends and family. Now people make jokes about DNA. Our struggle continued as we tried to explain what enzymes are; now everyone knows they're in laundry detergents and nutraceuticals. For the first years of NECi, chemists balked at the idea of enzymes for water testing. The inherent dangers and toxicity exposures of a chemistry lab were taken for granted - ever check out life insurance rates for chemists? Sensitivity to parts per million for many analytes was a great achievement of the second half of the 20th century. Yet my first lab job was method development for measuring neurotransmitters in biological fluids at ppb, using new electrochemical instrumentation. Detection limits down to single molecules is in the news these days. It's been clear that there's always room for the next improvement in the lab.

But change is always hard. Displacing the tried-and-true is harder than adopting something never done before. And that's where we have seen the obstacles to adoption of enzyme-based analytical chemistry outside the biomedical or clinical lab. Advantages in selectivity (simplifying sample prep), sensitivity, and safety are finally gaining attention from the lab community. These trends are aiding NECi recruit a variety of stakeholders in collaborative efforts at new method validation.