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Advanced laboratory experiences that impact lives: student and faculty perspectives¹

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How can one best stimulate and nourish those significant laboratory experiences with students that can “light a fire?”¹Students are quick to detect when novel and interesting approaches to apparatus, procedure, and analysis are sought and anticipated, and it can radically change the “What do you want us to do next?” atmosphere that sometimes is present in either introductory or advanced labs. While a spirit of research may be difficult or disingenuous to seek for some rather constrained advanced lab exercises, it should surely be laid-out as a desired outcome for more open-ended projects. In optical physics and metrology (Fourier optics, Faraday effect, sonoluminescence, high-speed interferometry, Schlieren, and holographic measurements), I will highlight several engaging examples where student driven experimental physics has blossomed within our advanced labs, and subsequently morale and career choices have been impacted. ¹W. B. Yeats, “Education is not the filling of a pail, but the lighting of a fire.”

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