

# The Need for a Light and Spectroscopy Inventory for Assessing Innovations

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## Summary

Full title: "The Need for a Light and Spectroscopy Inventory for Assessing Innovations in Introductory Astronomy Survey Courses"

In this era of dramatically increased astronomy education research efforts, there is a growing need for standardized evaluation protocols and a strategy to assess both student comprehension of fundamental concepts and the success of innovative instructional interventions. Of the many topics that could be taught in an introductory astronomy course, the nature of light and the electromagnetic spectrum is by far the most universally covered topic. Yet, to the surprise and disappointment of instructors, many students struggle to understand underlying fundamental concepts related to light, such as blackbody radiation, Wien's law, the Stefan-Boltzmann law, and the nature and causes of emission and absorption line spectra. Motivated by predecessor instruments such as the Force Concept Inventory (FCI), the Astronomy Diagnostic Test (ADT), and the Lunar Phases Concept Inventory (LPCI), we call for, and are working on, the development and validation of a Light and Spectroscopy Concept Inventory. This assessment instrument should measure students' conceptual understanding of light and spectroscopy and gauge the effectiveness of classroom instruction in promoting student learning in the introductory astronomy survey course.

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