

To: Dr Daniel Kuespert, Laboratory Safety Advocate
From: Dr. Hugh James Bissel, Department of Studying Things, JHU School of Learning
Re: Nomination of Charlotte Bright for the Dean's Safety Award

I wish to nominate Ms. Charlotte Bright, my student, for the 2016 Dean's Safety Award. Required information for the application appears below:

Student Name: Charlotte Bright
Student JHED: cbright2
Nominator's Name: H.J. Bissel
Nominator's JHED: hbissel1
Relationship to student: PhD Advisor

Narrative:

My laboratory in Krieger 310 operates a laser interferometry experiment measuring air turbulence near heated surfaces and objects. As designed, the experiment employs a Class 4 (2 W infrared) laser, creating a Nominal Hazard Zone (area within which the laser beam poses a hazard) covering the entire laboratory. This necessitated extensive (and expensive) safety precautions, including the provision of laser safety goggles (which cost \$350/each) for every research group member authorized to be in the lab, door interlocks, and similar measures.

During the design of the experiment, Ms. Bright noted that frequent adjustment of the optics is not necessary; indeed, such adjustment introduces the possibility of non-reproducibility into the results. Data collection is normally a matter of mounting a sample in the sample holder, activating the heat source built into the sample, and allowing approximately 2 hours for the experiment to run.

She suggested enclosing the sample stage and interferometer, arranging simple interlocks so that if the enclosure is opened, the beam shutter on the laser will automatically close. This limits the Nominal Hazard Zone to the interior of the enclosure, so many room modifications became superfluous and personal protective equipment is only required during beam alignment. She also worked closely with JHU Design Services and the KSAS machine shop to arrange for construction of the enclosure and wrote up a complete description of the controls to be installed for approval by the Homewood Laser Safety Committee.

I believe this work meets the definition of "equivalent safety," in that she used alternative methods and materials to address the hazards posed by the laser operation, instead of blindly following the prescription of the American National Standards on laser safety.

The work also markedly improved performance of the experiment, because enclosing the optical table and sample mount removed interferences caused by stray airflow within the lab. We found that run-to-run variation dropped from 15% to 5% in the experiment, which certainly qualifies as an improvement in the scientific performance of the apparatus.

I believe that Ms. Bright's work to assure safety and improved performance of our laser interferometer meets all stated criteria for the Dean's Safety Award, and I wholeheartedly recommend her for the honor.