

Abstract Submitted  
for the TSF10 Meeting of  
The American Physical Society

**Laser damage thresholds for *in vitro* retinal pigment epithelial cell by micro thermal sensing**<sup>1</sup> TAE CHOI, DIENYE ATEMIE, University of North Texas, MICHAEL DENTON, GARY NOOJIN, LARRY ESTLACK, BENJAMIN ROCKWELL, ROBERT THOMAS, USAF AFMC 711 HPW/RHDO, USAF AFMC 711 HPW/RHDO COLLABORATION — A cellular-level, high-resolution temperature sensing system was developed using a micropipette thermocouple sensor. The sensing system was properly calibrated and tested for retinal pigment epithelial (RPE) cells. We have integrated this sensing system with an in-house fluorescence microscope to determine laser damage thresholds for RPE cells. At the damage thresholds, we have determined a maximum temperature rise of 40 °C at the position  $\sim 5 \mu\text{m}$  away from the center of a cell. We have also acquired fluorescence images of the cell before and after irradiation. Disappearance of fluorescence clearly signifies the cell damage. Theoretical simulations for photothermal damage show similar trends in temperature rise.

<sup>1</sup>This work was performed in 711th Human Performance Wing/RHDO at Brooks City-Base and sponsored by ASEE summer faculty fellowship program.

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Date submitted: 17 Sep 2010

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