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Optimized conditions of Schlieren photography

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Schlieren photography is a technique used to capture air movement based on difference in fluid density. Air with higher temperature has lower density than surrounding air with lower temperature, leading to different values of refractive index. This work aimed to determine optimized conditions for schlieren photography to capture air movements in several situations. Schlieren photography was set up by using an off-axis single mirror and lens-and-grid system. The parabolic mirror with a 14.1-cm diameter has a focal length of 131.2 cm. The air movement was captured with Nikon V1 at 400 frames per second with resolution of 640x240 pixels. The camera was set at ISO400 with f/5.6 and used with 70 –300 mm zoom lens. Optimized conditions include percentage of light blocked by a knife edge, distance of test area to the mirror, illuminance of light source, and ambient temperature.

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