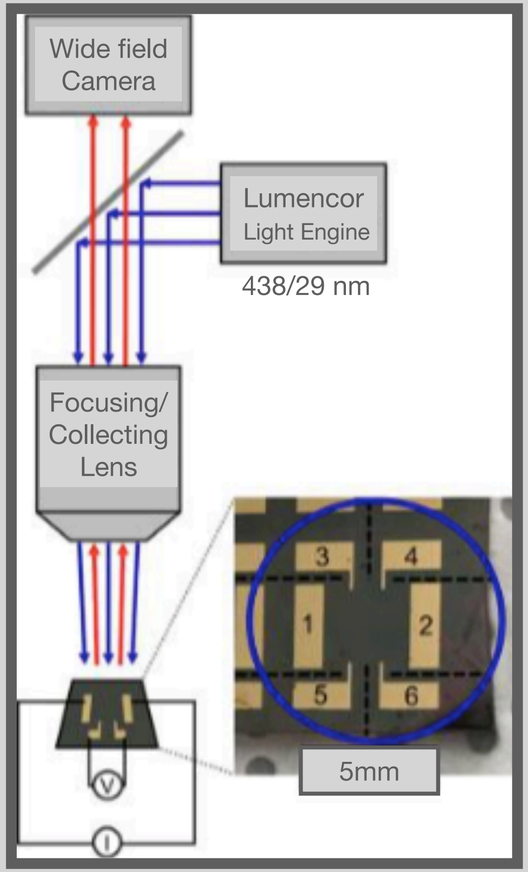
Materials Science: Solar Conversion Efficiency

Correlation between photoluminescence and carrier transport and a simple *in situ* passivation method for high-bandgap hybrid perovskites.

R.J. Stoddard, F.T. Eickemeyer, H.W. Hillhouse et. al., J Phys Chem Lett (2017) **8:** 3289–3298.

- Hybrid perovskites (HPs) have outstanding optoelectronic characteristics for use in photovoltaic devices.
- Measurements of photoconductivity and photoluminescence quantum yield (PLQY) are used for assessment of HP performance.
- Lumencor's MAGMA Light Engine delivers unprecedented performance by integrating 21 individually selectable, bright, stable, solid-state light sources across the UV-VIS-IR spectrum. Spectral content may be tuned by using several independent color band outputs in series or simultaneously, all under the control of an onboard microprocessor.
- Sources are well aligned, provide uniform illumination and color temperature control. Outputs are managed for robust, reproducible operation over time within one Light Engine and between multiple Light Engines.
- Hyper-spectral imaging, solar simulation and various metrology instrumentation applications are supported.



MAGMA Light Engine for Solar Energy Conversion

Experimental setup shown schematically for simultaneous measurement of the PLQY and mean carrier diffusion length.

Calibrated LED excitation, quantitative wide-field photoluminescence and four-point photoconductivity is used.

The blue circle indicates the illuminated area, (excitation with a blue light source from a Lumencor MAGMA Light Engine.)

Dashed lines indicate scribe lines to avoid spastic current pathways.

The current is sourced along gold (Au) contact pads 1 and 2, and the voltage is measure with inner probes (between 3 and 4 or 5 and 6).