

Perovskite: Remember that name

Materials using the mineral perovskite are inspiring hopes that they could be used in radically new optical-electronic devices – if some difficult problems can be resolved.



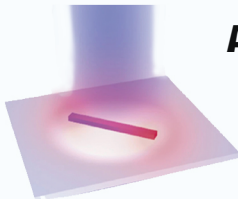
Perovskite
Mineral discovered in Ural Mountains; contains **calcium titanium oxide** crystals

A natural semiconductor useful in electronic applications

Named after the Russian mineralogist Lev Perovsky (1792-1856)

Adjustable materials

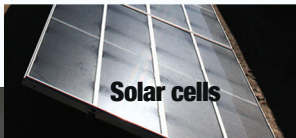
Metal halide perovskites
Have optical properties that can be tuned by adjusting electric charge, temperature, pressure or chemicals



Perovskite lasers and LEDs



Medical imaging

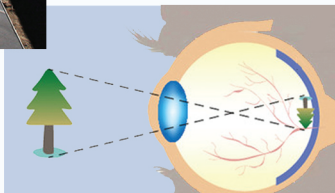


Solar cells



Light-detecting retinal implant

Smart sensor wristband



Two worries to resolve

Long term stability of perovskite materials is worse than that of silicon-based devices

Toxic lead in perovskite means devices have to be sealed to prevent leaks; fabrication and disposal and recycling must be done safely