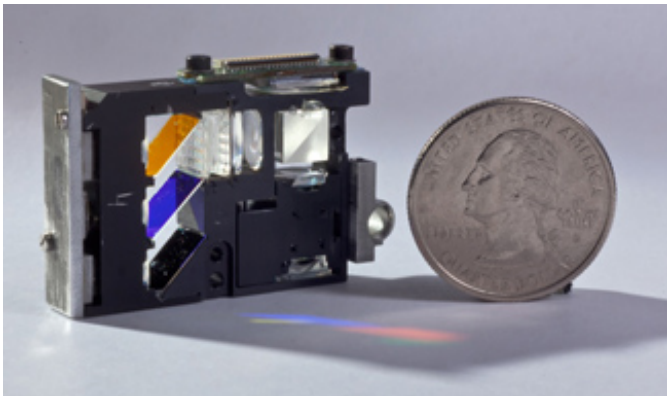


More Efficient Liquid Crystal Projectors

Written by Marco Attard
17. 07. 2012

Researchers at North Carolina State University and ImagineOptix debut new means of polarising projector light sources-- potentially leading the way to 90% efficient liquid crystal (LC) projectors.



Current LC projectors generate light from unpolarised light sources (such as LEDs) before passing it through a filter. However filters "waste" around 50% of originally generated light, turning it into heat... the reason projectors need (generally noisy) cooling fans.

The NC State technology uses a "polarisation grating-polarisation conversion system" (PGPCS). It consists of a small single-unit assembly made out of x4 immobile parts. A lens array focuses light into a grid of spot, before passing the light through a polarisation grating (a thin layer of liquid crystal material on a glass plate) and a louvered wave plate (a collection of clear, patterned plates giving beams of light the same polarisation).

Finally a second lens array focuses spots of light back into a single, uniform light beam. Only around 10% of the unpolarised light turns into heat, meaning the system needs no fans.

The researchers promise "[battery powered] projectors able to run for almost twice as long... LC projectors of all kinds can be made twice as bright but use the same amount of power that they do now."

Being compact and fan-free, the technology also finds future application in pico projectors, as well as projectors for use in mobile devices such as smartphones and tablets.

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