Biomedical devices from ultraviolet LEDs

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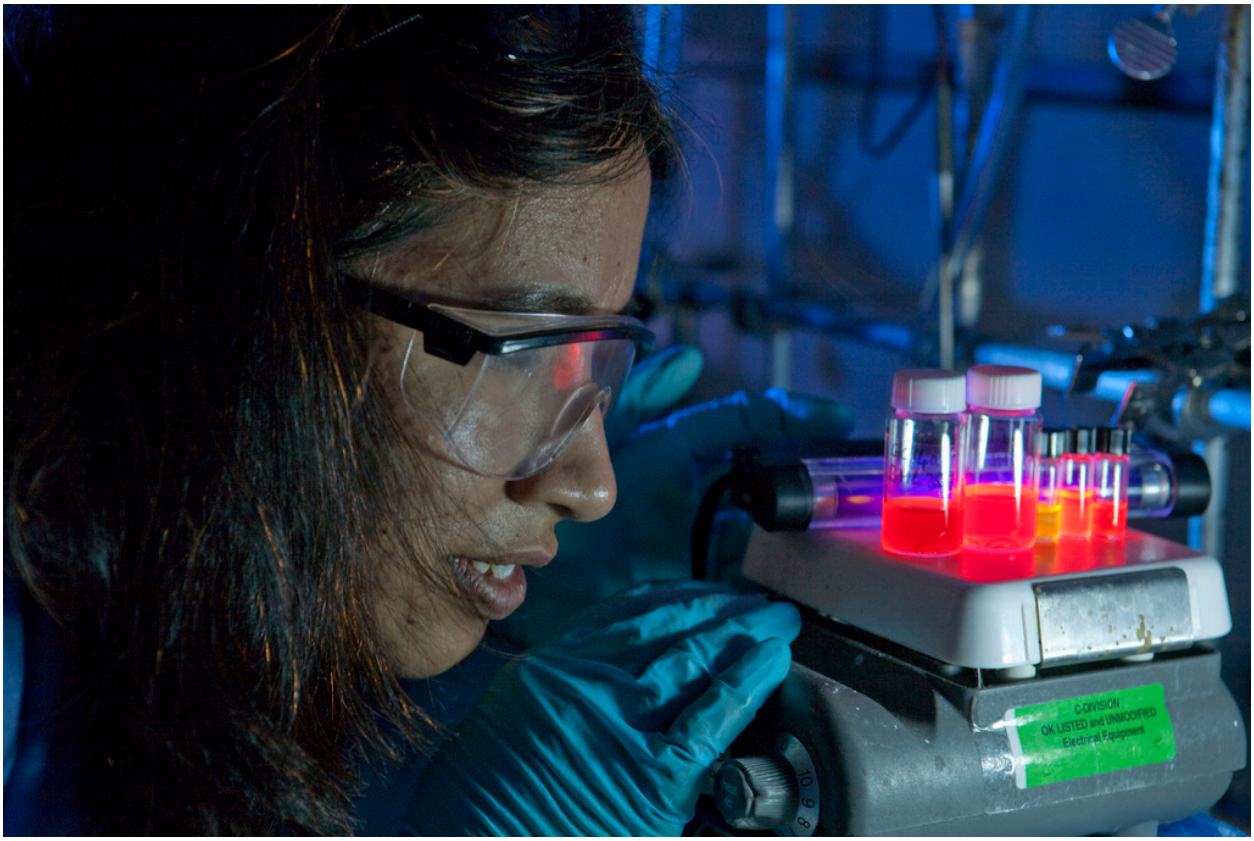

LEDs produce light in the ultraviolet range

A process for creating glass-based, inorganic light-emitting diodes (LEDs) that produce light in the ultraviolet range has been developed by a multinational team of scientists.

The work, reported in the online *Nature Communications*, is a step toward biomedical devices with active components made from nanostructured systems.

Solution-processed inorganic nanocrystals hold promise

LEDs based on solution-processed inorganic nanocrystals have promise for use in environmental and biomedical diagnostics because they are cheap to produce, robust, and chemically stable. But development has been hampered by the difficulty of achieving ultraviolet emission.

In their paper, LANL's Sergio Brovelli and a research team lead by Alberto Paleari at the University of Milano-Bicocca in Italy describe a fabrication process that overcomes this problem and opens the way for integration in a variety of applications.

Light-emitting devices needed for biomedical diagnostics and medicine

The world needs light-emitting devices that can be applied in biomedical diagnostics and medicine, Brovelli said, either as active lab-on-chip diagnostic platforms or as light sources that can be implanted into the body to trigger some photochemical reactions.

Such devices could, for example, selectively activate light-sensitive drugs for better medical treatment or probe for the presence of fluorescent markers in medical diagnostics. These materials would need to be fabricated cheaply, on a large scale, and integrated into existing technology.

The paper describes a new glass-based material that is able to emit light in the ultraviolet spectrum and be integrated onto silicon chips that are the principal components of current electronic technologies.

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