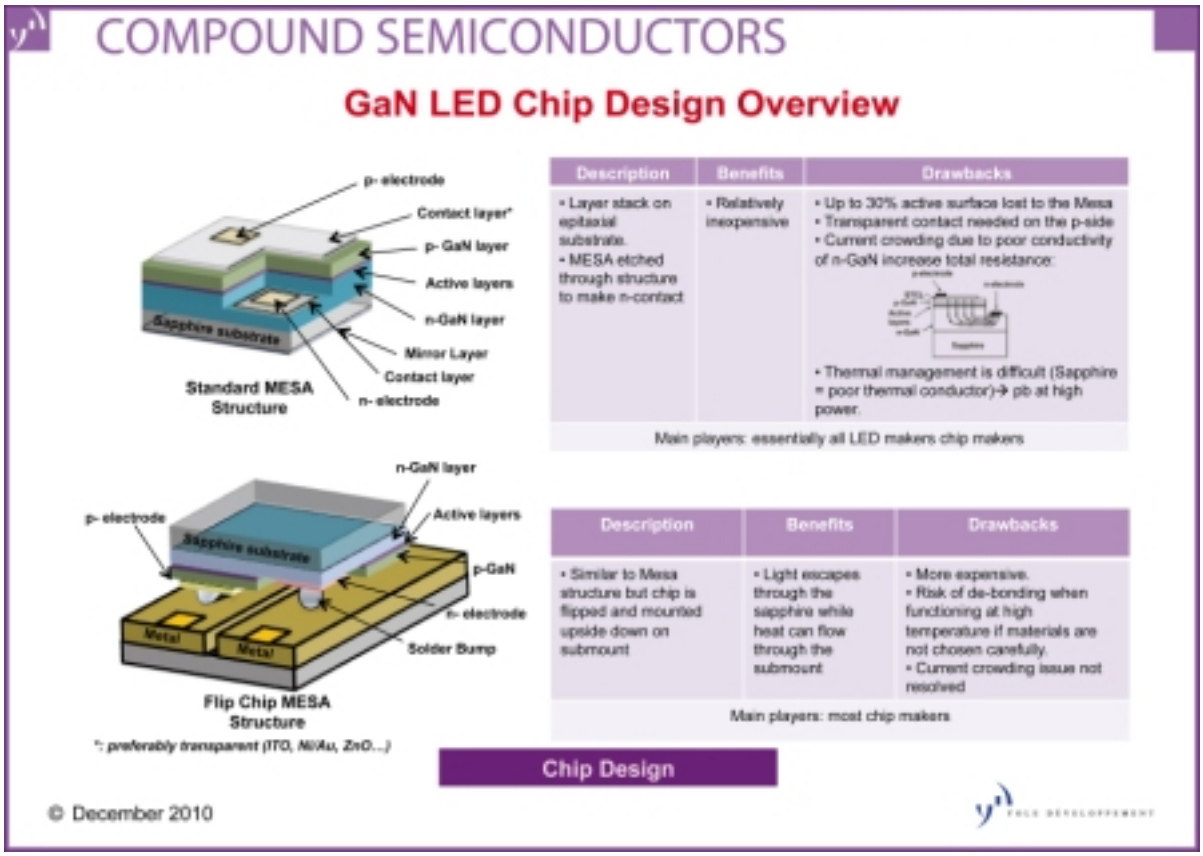
Significant improvement in LED fundamental and manufacturing technologies needed for massive adoption in general lighting applications

Medical Design Technology

This report provides the latest vision of the established and emerging front-end and back-end technologies for LED manufacturing. It also provides updated volume and $ forecast for packaged LED, split by application with capacity analysis and price trends.



Market

The packaged LED market is experiencing tremendous growth with an expected CAGR of 28.2% between 2009 and 2015. Growth will be driven by large LCD backlight applications through 2013-2014. However in order to successfully transition to general lighting applications, significant technology and manufacturing efficiency improvements are still needed in order to reduce the cost per lumen of packaged LED. Such improvements will be achieved through:

- Economies of scale
- LED efficiency improvement, including at high power (droop effect)
- Better phosphors
- Improved thermal management and packaging technologies
- Significant improvements in LED epitaxy cost of ownership (yield and throughput)

Fundamental Challenges
Significant technological challenges remain to be solved in order to achieve the cost and performance target set by the industry to enable adoption of LEDs for a large number of applications. Solving the high current efficiency droop remains a priority.

Front End Manufacturing
MOCVD manufacturers are targeting a x2 reduction in epitaxy cost of ownership every 5 years.

LED Packaging
Thermal management remains the main challenge, impacting device lifetime, stability and limiting driving currents.
The development of new phosphors is also critical in achieving high efficiency and bringing color consistency, stability and rendering at the levels requested for general lighting applications.

Manufacturing Technologies
Volume manufacturing on 6” wafers will start at the end of 2010 and massive transition from 2” to 4” is expected in 2011. However the adoption of 8” wafers remains uncertain and will require that Sapphire wafer manufacture achieve significant cost reductions.

For more information, please contact David Jourdan (jourdan@yole.fr [1] or +33 472 83 01 90)

SOURCE [2]

SOURCE [3]

Source URL (retrieved on *09/21/2014 - 10:49am*):
http://www.ecnmag.com/news/2010/12/significant-improvement-led-fundamental-and-manufacturing-technologies-needed-massive-adoption-general-lighting-applications?qt-video_of_the_day=0&qt-recent_content=0

Links:
[1] mailto://www.i-micronews.com/jourdan@yole.fr
[2] http://www.i-micronews.com/lectureArticle.asp?id=6052
[3] http://www.MDTmag.com/News/Feeds/2010/12/products-electronic-components-significant-improvement-in-led-fundamental-and-man/