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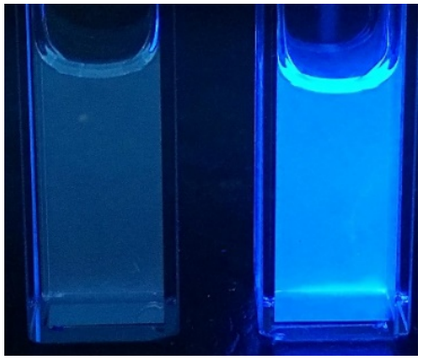
DOTZ NANO DEVELOPS GRAPHENE QUANTUM DOTS WITH SIGNIFICANTLY ENHANCED QUANTUM YIELD

- Significant rise in brightness intensity achieved
- Essential requirement for high end applications such as high definition TVs and medical imaging
- Capable of large scale manufacturing
- Potential customers evaluating samples

Following six months' of extensive research and experimentation, with verification by independent laboratories, Graphene Quantum Dots (**GQDs**) producer Dotz Nano has succeeded in developing new cost-efficient GQDs with **a significant rise in Quantum Yield (QY) (>65%)**, adapted for large-scale manufacturing. QY essentially dictates the intensity of the brightness from GQDs and is therefore a key driver in the commercial applications to which GQDs can potentially be applied. This new development is applicable to the high-end users of GQDs such as displays, TVs, solar cells and biomedical imaging, a market previously not available to Dotz Nano.

QY is one of the most important properties of quantum dots – it is the brightness or fluorescence intensity of the Quantum Dot (**QD**) as demonstrated in the figure below. QY is the ratio of photons absorbed, to the photons emitted through fluorescence.



Optical image of GQDs under visible UV light.
Left side - Standard GQDs with QY of 5-8%. Right side - GQDs with enhanced quantum yield.

In applications that require a high QY, such as high definition TVs and medical imaging, QY is an essential parameter that is used to evaluate the light emission properties of the Quantum Dot.

The new process allows Dotz Nano to currently produce blue fluorescent GQDs with a **QY of over 65%** compared with a modest 5-8% achieved currently. For comparison, metallic based Quantum Dots currently marketed by several Quantum Dots producers' and used for high-end applications as listed above, exhibit quantum yields of 50-60%. Standard conventional Graphene Quantum Dots when produced exhibit much lower QYs, usually in the 3-6% range. Dotz Nano's lower QY GQDs remain commercially applicable to low end products such as textiles, carpets and UV tagging.

Several producers of high QY applications and products have received samples of Dotz Nano's high QY GQDs to evaluate for compatibility with their application products that can ultimately lead to potential sales for high-end applications.

Commenting on the new development, Dotz Nano CTO Dr. Michael Shtein, said "*This development is a significant game changer for Dotz Nano. The new GQDs have a QY comparable to metal based QDs but with the low cost and non-toxic properties of Dotz GQDs. This new development potentially opens new high value markets such as high definition TVs, medical imaging, lighting products and photovoltaics. This is in addition to the important attribute that GQDs have versus metallic QDs, that is GQD's non-toxicity. Dotz aims to continue the research and development of other sized GQDs that will potentially allow Dotz Nano to supply the full range of high yield GQDs colors to any industry and/or applications.*"

Multi kilogram production capacity of the enhanced GQD is attained with existing equipment installed at Dotz Nano's facilities in Israel and a potential manufacturer partner capable of mass producing the main product has been identified.

Dotz Nano continues to undertake research and development for large-scale manufacturing of cyan, green and yellow fluorescent GQDs with enhanced QY and look forward to updating the market on these key technological developments as they unfold.

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About Dotz Nano

Dotz Nano Limited (ASX: DTZ) is a technology company focusing on the development and manufacture of GQDs. Its vision is to be the premier producer of GQDs by producing and supplying high quality GQDs for use in various applications including medical imaging, sensing, consumer electronics, energy storage, solar cells and computer storage.

To learn more about Dotz Nano please view the website and our corporate video via the following link: www.dotznano.com

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