Don't Mess with Texas!
San Marcos, TX based Quantum Materials Corp. Prepares for Commercialization Stage of QDX™ Cadmium Free Quantum Dots - Targeting Six of the World's Leading Flat Panel Display Manufacturers

As we have been told on more than one occasion, everything is just a little bigger down in the Lone Star state of Texas. It is after all the largest state in the Continental US. (Yes we know that Alaska is close to 3 times bigger, but then again Alaska came to the party much later than Texas!). You see, down in Texas the steaks are just a little bit bigger, the hair is certainly bigger - you've got "Big D" (that's Dallas for you non-Texans) and of course you have (or had) JR Ewing's Texas sized ego. With all the super-sized stuff coming out of Texas we think it’s a bit ironic that one of the next BIG THINGS coming out of Texas is actually something very, very small. Yep, you guessed it: quantum dots - or more specifically nano-crystalline sized "semiconductors" that are just a little larger than individual atoms in size - but have extraordinary capabilities to convert energy into extremely narrow bandwidth, pure-color photonic light emissions, and are now positioned to revolutionize the opto-electronic industry in a BIG way by allowing consumer electronics giants such as Samsung, Sony, LG and host of other manufacturers to redesign standard LCD flat panel displays to materially increase color spectrum levels - so that they now approach the full range of colors recognizable by the human eye.

San Marcos, Texas based Quantum Materials has been in the lab working on their quantum dot nano-material designs for a number of years developing a highly stable class of cadmium free quantum dots which maintain their high performance characteristics even when exposed to water, air and high temperatures. One of the primary drivers moving this new product format forward is the fact that consumer electronics groups are able to incorporate quantum dot driven color design directly into existing LCD manufacturing fabs to build this new paradigm in panels without large capital expenses or extensive retooling of existing lines. High color palette rendering capabilities have been an essential part of the design upgrade in flat panel displays of late, especially in light of the new UHD (ultra high definition) pixel geometry - also referred to as 4K - which essentially quadruples the number of pixels in the screen area bumping up the resolution level to "satellite image" like quality. Quantum Materials proprietary quantum dot manufacturing process which is known as "continuous flow chemistry" is protected by a substantial intellectual property estate of patents (from a number of sources including Los Alamos National Labs, Bayer Gmbh as well as several Universities) and allows Quantum Materials to produce these highly sought after nano-particles in commercial quantities at low capex and opex cost levels.

One of the groups leading this charge in next generation color palette capacity is market leader Samsung (we had a chance to see the initial Samsung displays at this year's CES show in Las Vegas and they are absolutely stunning) with their quantum dot driven SUHD line of Ultra High Def sets that are being met with high praise from analysts and industry experts - and more importantly these sets are becoming popular with consumers and sales are ramping up quickly as these sets have the look and feel of OLED quality displays at materially lower consumer price points. Here is a link to a recent report on how these displays are picking up steam with regards to consumer sell through numbers: [http://english.yonhapnews.co.kr/news/2015/07/16/0200000000AEN20150716002900320.html](http://english.yonhapnews.co.kr/news/2015/07/16/0200000000AEN20150716002900320.html)

In fact, just last night on a sundry shopping mission to the local Costco store I was walking by the flat panel display section when I happened upon my first "in person" sighting of Samsung's new flagship quantum dot driven display, the SUHD 65" UN65JS850SD UHD LED LCD (the sets we saw at CES in January were prototypes and not production level models). Make no mistake, this display is absolutely riveting and I spent the next ten minutes just staring at the video loop showing off all the new features including the 4K resolution and OS - but what really sets this TV apart and easily the most prominent differentiator on this next generation class of display hands down is the color rendering capability. The intensely rich colors literally jump out of the panel and into your eye, and the level of color
is a very sharp contrast to all the other plain Jane HD 1080 sets in the display section. Unlike some of the earlier versions of this format which were a bit harsh in their color rendering, these sets are absolutely gorgeous and they are literally hard to turn your eyes away from. The colors on this set are off the chart vivid and the black levels are jet black - and we believe would stack up quite nicely against the black levels of OLED sets - which admittedly are still the gold standard on that front. This is simply a display that you have to witness in person to understand the jump up in quality over the set you have in your own home. In fact after just a short viewing session of about 10 minutes or so my eyes were quickly "recalibrated" so that when I got home and flipped on the prime time edition of the Tour de France (I have a late model 1080p Samsung set with full HD feed which before the SUHD encounter looked fantastic) the picture on my home set now looked quite grainy and the colors seemed very muted. I thought maybe it was the TDF feed, so I switched over to an HD channel baseball game and it was the same situation. So as you can see, the "SUHD experience" has now ruined me forever for watching plain old HD 1080p technology, it's that much better! - and yes I will be in the market to purchase one of these sets in the very near future.

When you look at the price points, it's quite easy to see why Samsung and many of the leading panel manufacturers are moving aggressively towards this new format. On Bestbuy.com right now you can purchase the Samsung 65" SUHD 4K set for $2,999.99. What does the 65" LG OLED 4K go for? Well we're glad you asked. If you just have to have that OLED sticker on your next display my friend get ready to fork over $SEVEN GRANDS! (Ouch!) I don't know about you but $4,000 extra dollars for a display that looks for all intents and purposes materially the same is a chunk of change we are just not willing to part with - (granted this OLED was curved, but for $3,500 you can get the 65" curved 4K SUHD). We also looked at the online reviews on both sets. The SUHD quantum dot set was ranked 4.7 stars out of five (with 82 REVIEWS) and the LG OLED set was ranked lower at 4.4 stars out of five (and had only 9 REVIEWS!). Are you starting to understand the momentum that QD technology is starting to generate here? And remember, OLED has had a 3 to 4 year head start on QD design - so with another year or two, the QD format looks to be on a very steep growth curve going forward. When you see this kind of data, it's a little humorous to view some of the comments being lobbed at QD technology on places such as the OLED (Universal Display Corp. - which is a big supplier of the opto-electronic materials that go into the manufacture of OLED sets) chat boards on Yahoo. They try to disparage inquiries about QD based technology with statements like "don't pay any attention to QD technology, it's just lipstick on a pig" and then go on to cite statistics about "lower power consumption of OLED vs. LCD based panels". Well, we had a look at that issue as well on these two sets. While neither set had the Energy Star Certified rating level (let's face it, these are the Ferrari's of the display industry, not the Prius'), the LG OLED set had annual power usage of 248 kwh and annual operating power cost of $27USD - while the Samsung SUHD QD driven set had annual power usage of 152 kwh and annual operating cost of just $17USD! That's a redux in power usage of about 38% for the QD/LCD format set. Lipstick my eye. Ha! - and when you translate this level of power savings to battery operated handhelds like tablets and smart phones this difference is going to be a big deal as the holy grail these days in the smaller level displays is extension of battery life.
especially as these devices advance in capability and chug more power. That's OK, the fact that the OLED crowd isn't paying attention to QD tech just means they won't even see it coming - but rest assured QD technology is coming, and it's coming fast!

We happened to be visiting the web site of one of the other quantum dot developers/manufacturers the other day - a Manchester, England based group named Nanoco Technologies - and noticed that they had added a photo to the front page of their website that links to the update on a quantum dot facility being built in Cheonan, South Korea by their JV partner Dow (which incidentally they mention in the press release is still just in the commissioning stage after slipping several projected opening dates). What we found to be a bit odd is the fact that the photo shown on the web page was that of a VERY LARGE factory building that looks to be several football fields in length (we have included that screenshot below).

So is this a real photo of the new Dow/Nanoco quantum dot factory? The reason we ask this is that when comparing this building design to the actual aerial shot of the Cheonan Dow display materials facility (that has been there for a few years now) on Google Earth and is where the new quantum dot facility was to be built, we could not match this building up with any recently constructed structures - or even see one of the existing structures that looks materially similar to this photo (as late as Feb 2015). Well we have no way to be certain if this is an actual photo of the building or not (and we are not saying here that it isn't) - but if this is the new building it sure looks massive in size to us (and expensive!) and when you consider that the projected initial quantum dot capacity from this facility has been reported to be in the neighborhood of 800kg of quantum dots in the first year - that building looks positively
Speaking of quantum dot facilities, I am extremely excited to report that next week (July 28-29) I will be visiting Quantum Materials' San Marcos, TX/Star Park corporate headquarters and development lab space, where they have two working reactors on site that have present combined capacity of 2,250 kg of high performance level, cadmium free QDX™ branded quantum dots right now - which is just a skosh under 3X the reported Dow/Nanoco's projected first year capacity (as reported via several sell side analyst reports/tech commentators covering the company - that is once it's fully commissioned). During this trip I will be spending some quality time with QMC's management and technical teams and will be publishing a full length report post trip including photos of the facility and interviews with the team - and will be sure to get you a copy upon completion.

Quantum Materials' most recent press release mentioned that they had recently shipped trial orders of their new QDX™ quantum dots to 6 of the world's leading display and television manufacturers. We realize this has been a long journey for many shareholders for Quantum Materials Corp. to arrive at the commercialization "tipping point" - but based on how we see this market progressing at this time combined with QMC's ability to manufacture a low cost, high quality product that retains its performance specs even when subjected to water, air and high temp's (up to 260° Celsius) we are getting the sense that the market is really starting to take notice of this "Little 'ol Technology Startup from San Marcos, TX" - and the long wait for market validation could be very close at hand. We pulled the historical trading on QTMM over the past 12 months and during that time well over 100 million shares have traded hands, which for a micro-cap stock is impressive to be sure. We estimate that with that much volume trading in a price range of $0.11 to $0.30 cents a share, much of the lower priced stock that was looking for an exit has moved on, therefore with any material news announcement or fundamental development, we could very well be looking at a new trading range for QMC's shares going forward.

Since we started this post on a Texas theme - we are going to end it on one - so enjoy this classic anthem from another "Little 'ol Band from Texas" and we'll look forward to catching up with you on the other side of our trip to San Marcos: [https://www.youtube.com/watch?v=Vppbdf-qtGU](https://www.youtube.com/watch?v=Vppbdf-qtGU)

You can get more information on Quantum Materials Corp. from their website at: [www.qmcdots.com](http://www.qmcdots.com)

Until next time.

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