

## To be corrected comments

Submitted on Thu 21 Feb 2019 at 11:06

### Comments

The paper gives a description of the processing method used and the structural and optical properties of spin coated GrO thin films.

### Comments:

- The introduction is very concise, but no mention is made of possible applications for the thin films.
- ✓ **Added as follows in p1 line 12-13: These properties of GO and rGO makes them potential candidates for the coatings as transparent electrodes for light-emitting diodes (LEDs) [4] and solar cell devices [5]**
- p2 Section 2 line 4: I am assuming the amount is 40 microlitres, please use the mu symbol and L for litres (SI Notation)
- ✓ **Corrected**
- p2 Section 2 line 4: Why did you use Si wafer and not very much cheaper glass substrates? Does this tie in with possible applications? See my first comment above.
- ✓ **Si wafer was chosen because it does not exhibit any fluorescence, glass might exhibit some fluorescence of its own especially the photoluminescence (PL). We need assurance that the luminescence measured was only from the graphene oxide. Yes the use of silicon tie with possible applications as the thin films can be used in fluorescent –based biosensor applications.**
- p2 Section 2 line 6-7: You mention that you repeat the coating process to get a number of layers. How many repeats or how thick were your layers.
- ✓ **Added as follows in p2 Section 2 line 6-7: The coating process was repeated 5 times to get a number of layers with thickness of about 15 nm as estimated from cross-sectional SEM images**
- p2 Section 2 line 7 - 8: It is not mentioned whether the XRD measurements were the conventional theta-2theta or grazing angle configuration.
- ✓ **Added as follows in p2 Section 2 line 7-8: The scans were measured in the conventional theta-2theta configurations in the range 5-80° in a step of 0.01° while the X-ray generator was set at standard settings of 40 kV at 40 mA.**
- p2 Figure 1 and Section 3.1: Why is the magnification of the microstructures so low! Can one not see a bit more detail when using higher magnification. If there is only partial coverage which is implied, this will only be visible at a much higher magnification, not at 100x. Also one will be able to see more clearly what the features on the surface are.
- ✓ **SEM images were changed to higher magnification**
- p3: When referring to a Figure in the text, one should use a capital letter F not lower case. Please correct for all cases in the text.
- ✓ **Corrected.**

- p3 Section 3.2 and Figure 2: How thick are these GO layers, since the (100) Si substrate is not visible on the XRD patterns. I would expect to see a strong peak for the Si.
- ✓ **The thickness of the thin film was about 15 nm and (100) Si peak was not observed.**

**Submitted on Fri 05 Apr 2019 at 12:44**

### **Comments**

This is a well-written paper with a clear flow of content. The steps taken in the work are clear, and each result is discussed in the context of current literature.

Question B1 in the evaluation, regarding originality of the work, needs to be addressed in either the introduction or conclusions. The paper shows that as-purchased GO can be improved on as described in the text, but this step by itself is not particularly original. It is very likely that this work forms part of the initial stages for a project, and it is suggested that the authors motivate the work in the paper in the broader context of what it will be used for further along in the project. This would then help to address the need for this work and how it fits into a broader research programme with planned original/novel outcomes.

- ✓ **Added as follows in p1 line 13-17: For this work we investigated the structural and optical properties of spin coated GO thin films. These GO thin films will be used to form thin conformal coating over phosphors thin films .i.e. ZnO:Zn and La2O2S:Eu3+, which can provide protection from environmental degradation and its effect on the optical properties.**
- ✓ **Based on our new work, added as follows in conclusion line 11-12: Due to the poor uniformity of the GO films spin-coated over the substrate, alternate ways of producing such thin films will also be investigated in future work."**

### **Comments:**

1) The abstract is a bit long, but gives a good summary. It should be shortened if the editors require this, but it is not necessary from a scientific perspective.

2) At first glance, it is not immediately clear that the SEM images show a highly dispersed "coating" of GO particles. It can be interpreted as a very smooth continuous GO film with particles on top. The discussion section comments on the highly non-uniform nature of the coating, but it is suggested that this is also mentioned in section 3.1

- ✓ **Added as follows in section 3.1 line 2-4: GO thin film is not uniform all over the substrate instead the GO sheets look clustered, heavily wrinkled and scattered on the surface of the wafer which results in less coverage of the silicon surface.**