Responses to Reviewer 2

Point 1: Author can modify the title as “Approaches of semiconductor nanomaterials for the improvement of gas sensing properties: A review”.

Response 1: It's a vital suggestion for the article and I'm so grateful that you can figure to me. After modifying this article greatly, I reconsider the content and I think maybe "Approaches to enhance gas sensing properties: A review” as the title is more suitable(line 2-3). And I strongly hope to know your idea if it's proper.

Point 2: The introduction section need to be improved by providing the hint of information on nanomaterials and morphology etc.

Response 2: It's a valuable suggestion, so there is a big adjustment in section 1. In line 47-56, basic information of nanomaterials is introduced, and nanostructure and morphology are also referred. I firmly believe that this idea contributes to this article.

Point 3: In section 2.1.1., Nanorod section, discussion on nanorod based CO detection studies also need to be included from 1. Adv. Mater., 2003, 15, 997-1000; (2) Talanta, 2010, 81, 37-43.

Response 3: The former is about nanowire so I introduce another in the first paragraph in section 2.2.1 as follows.
For example, Dewyani and co-workers[34] used a simple co-precipitation/digestion method to synthesized Co$_3$O$_4$ nanorods exhibiting excellent CO sensing properties. Especially, the response time was short as ~3-4s and the recovery time was ~5-6s; the operation temperature was comparatively low to 250°C. Their nanorods demonstrated prominent potential as CO sensors.

And the references are as follows:

Point 4: In section 2.1.2. the sentence “Besides, nanosheets could also be employed to assemble nanospheres[11], hollow spheres[12, 13], nanosheet arrays[14], thin film[15], etc.” seem to be unnecessary at this point of discussion.

Response 4: After reconsidering, I find your idea is so right because the sentence isn't meaningful to this section and I'm so grateful that you informed me. It has been removed from the article.

Point 5: Nanoflower section should be improvised with enhanced explanation with recent reports.
**Response 5:** It isn’t proper that insufficient advances about nanoflowers were provided. And some recent reports have been added into this section.(Line 229-239)

**Point 6:** The gas sensing approaches of carbon nanotubes (ACS Sens. 2016, 1, 354–357; Nanoscale Res. Lett. 2011; 6, 605) and nanocomposites are missing in the current manuscript

**Response 6:** Nanorod has been introduced as the example of 1D material, maybe nanotube shouldn’t be demonstrated detailed. So I cite two articles in Table 2.


**Point 7:** Points representing the advantages and limitations of gas sensing approaches should be delivered for the readers of sensors.

**Response 7:** This suggestion is useful. I added them in conclusion.

**Point 8:** The best suitable nanomaterial based gas sensing approaches should be hinted for upcoming researchers. The comments on approaches are missing, which is essential for review article

Response 8: This suggestion makes an important contribution to poor conclusion. I add them in conclusion and want to know if another revise is need to do.

**Point 9:** The cost-effectiveness and modification requirements of those approaches could be hinted.

**Response 9:** These contents are summarized in conclusion.

**Point 11:** Many sections have insufficient of explanation, which should be rectified. Future possible directions of gas sensing approaches should be mentioned in conclusion section.

**Response 11:** Thank you so much that a very valuable suggestion is offered and I make huge modifications. In section 2.1.2, growth of crystal is added and mechanism of surfactant is introduced. In section 3, structures of three typical 2D materials are introduced and references are replaced and mechanism is introduced. In section 4, there is a big change. I reinvestigate the function of noble metal particles and illustrated with diagrams to demonstrate this part better. In the conclusion, I introduce my opinion about future sensitive materials.

**In the end, I want to know if Point 10 was missed because of file**
format or it was a simple number error. If Point 10 was missed and haven't been solved, please inform me and I'm willing to make another modification.