Review Form 1.7

Journal Name:	**Chemical Science International Journal**
Manuscript Number:	**Ms_CSIJ_112261**
Title of the Manuscript:	**Flexible Pressure Sensor Based on Carbon Black/PVDF Nanocomposite**
Type of the Article	**Original Research Article**

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PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments **1. Is the manuscript important for scientific community?** (Please write few sentences on this manuscript) **2. Is the title of the article suitable?** (If not please suggest an alternative title) **3. Is the abstract of the article comprehensive?** **4. Are subsections and structure of the manuscript appropriate?** **5. Do you think the manuscript is scientifically correct?** **6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.** **(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)**	-	
Minor REVISION comments **1. Is language/English quality of the article suitable for scholarly communications?**	-	
Optional/General comments	Below you will find the comments relating to the article you suggested my scientific touch. For the titles of the images it would be interesting not to use the determinants. Image 3, 6 and 7 do not appear in the body of the article. Apart from these small irregularities congratulations to the authors for this beautiful research work.	

composite film. The uniform dispersion is influenced by the particle size, shape, and orientation of the particles. The XRD pattern has been carried out on CB/PVDF composite in the ratio by mass percentage is shown in Fig. 3. It is clear from the figure that there were peaks of PVDF corresponding to a 2 θ angle of 20.160 and 39.840. The presence of a dominant peak at 20.160 confirms the presence of beta-phase in PVDF material. The XRD pattern confirms the semi-crystalline nature of PVDF polymer film [29]. The crystalline size for the PVDF-110 peak was found to be approximately 0.89 nm using the Scherrer equation. The diffused peak of carbon black was observed at an angle of 23.8° (002) plane, this diffused peak may be caused by the lack of crystallinity of the carbon black and polymer mixture at this angle. The PVDF restricts the diffract of the film at this angle due to its polymeric structure, the peaks of PVDF dominated the CB as indicated by the XRD spectra [30-32].

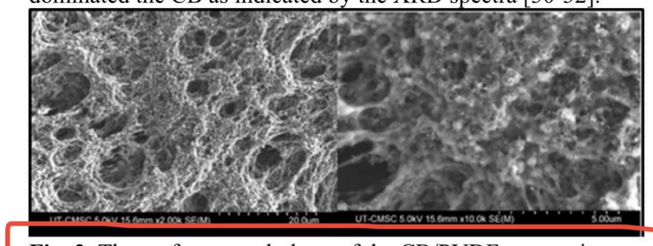

Fig. 2. The surface morphology of the CB/PVDF composite was investigated using a Scanning Electron Microscope (SEM).

Fig. 3. X-ray diffraction patterns of CB/PVDF.

b. **Pressure Sensing Characterization Sensing Mechanism**

Fig. 4 shows the time response for CB/PVDF film when vacuum pressure was applied. It was noted that when pressure

1 (a-c). This ratio was chosen in order to have high carbon: binder ratio and to provide clarity on the analysis. The binder also helps in forming a uniform film that is mechanically stable when loading and unloading pressure is applied. The solution was vigorously stirred to ensure homogenous dispersion of conductive nanocomposite. This composition was also ultrasonicated for 1 hour with a constant interruption of 20 mins to avoid the agglomeration of nanocomposites. The PE substrate was then prepared according to standard practice for the preparation of surfaces of plastics to enable adhesive bonding of the CB/PVDF composition. The physical surface preparation of the substrate involved wiping with methanol, sanding, wiping with a clean dry wipe, and then wiping with the methanol wipes again [28].

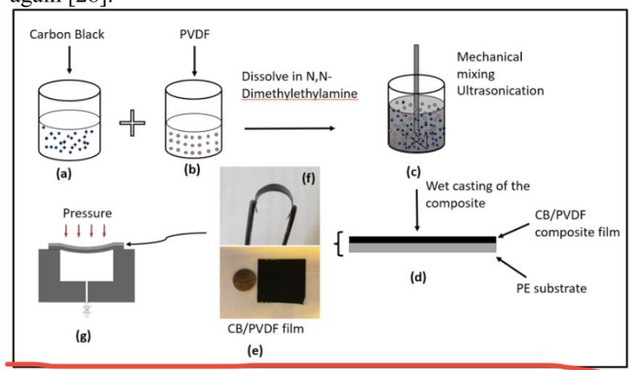

Fig. 1. The schematic illustration for the preparation of CB/PVDF composite film for fabrication of pressure sensor.

The CB/PVDF nanocomposite was wet-casted onto a flexible PE substrate to form a thin CB/PVDF film of about 0.1 mm (Fig. 1. d). The film was then placed on a warm plate at 30 °C for 20 minutes to evaporate the extra DMF solvent, furthermore, the film was set to air dry in the room for 12 hours. A sensitive thin film of CB/PVDF was formed and it had a thickness of about 30 microns, the film was etched to form a thin strip of about 2 mm thick. The film was mounted to a (20 × 20 × 10) mm acrylic PMMA cubic with an opening at the center. The center diameter was measured to be 5 mm with a depth of 5 mm (Fig.1 g). The CB/PVDF conductive film was then mounted to the surface containing the 5 mm hole in the acrylic PMMA cube (Fig. 1. g). A high-pressure compressor was then connected to the acrylic PMMA fixture through the valve attached to the 5 mm hole. The pressure gauges were mounted to

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PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

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