Comments to Author:

Title: Radiation-Activated Pre-differentiated Retinal Tissue Monitored by Acoustic Wave Biosensor

Overview and general recommendation:

In the proposed manuscript, the authors studied the response of a mouse retinal tissue to radiation using a thickness-shear mode acoustic wave resonator. In particular, the authors evaluated changes in the resonant frequency and motional resistance of the TMS device under various conditions of light intensity and bathing solution. Experiments implemented using pre-differentiated retinal tissue deposited on TSM devices showed responses clearly different from those obtained with bare TMS resonators. As pointed out by the authors, the exact interpretation of the changes in acoustic parameters caused by the exposure of TSM coated with retinal tissue to light remains a challenge. However, in my opinion, the results are interesting and the suggested solution seems very promising for the detection of malfunctioning tissue that can occur in disease states.

Only minor revisions are required for the manuscript to be eligible for publication in Sensors.

1. The introduction does not highlight what the final object of the work is. I suggest highlighting this aspect not only in the conclusions, where authors reported some retinal diseases.
2. Row 114-116: “The instigated changes in Fs and Rm are clearly dependent on the intensity of the light employed in the experiments but the alterations according to solution type are not different from a statistical analysis (Fig. 2)”. I think this sentence can be rewritten to better explain that the solution type do not significantly influence the response of bare devices.
3. The legend of figure 3 is not visible.
4. What is the bathing solution used in experiments with retinal tissue? Do the authors believe that the responses are independent of solution type even in the case of using retinal tissue? If so, why?
5. Why experiments using retinal tissue where performed only with high light intensity?
6. Why are error bars reported in Figure 4 for ECL+Tissue quite higher respect to those obtained for bare devices? Can the authors explain the origin of these errors? Authors could clarify if they measured always the same device or different devices characterized by different depositions.