We thank the editors for interesting comments which helped us to improve the quality of work. We addressed the each comment and revised the manuscript accordingly.

Q- What are the chemical coatings and corresponding target molecules.

Ans- Micro cantilevers coated with antibodies (blue-green) that capture viruses (red spheres). As the cantilevers identify and capture more virus molecules, one or more of the mechanical or electrical characteristics of the cantilevers can change and be detected by an electronic interface. The size of the particle being detected and captured is one of the factors affecting the size of the cantilever. These antibodies are proteins produced in the blood in response to the presence of an antigen (e.g., virus, bacteria, toxin).

Q- How realistic is to fabricate the cantilevers with the proposed dimensions?

Ans- The cantilevers with these dimensions are easily to fabricate. In our previous work [1, 2], we fabricated such types of cantilevers for underwater application with higher sensitivity and directivity, even though the dimensions of some cantilevers were very low.

Q- What are the detailed dimensions of the cantilever?

Ans- These micro cantilevers have a length of 100-600 μm, a width of 50 μm, and a thickness of 1.9 μm, respectively.

Q- How is the cantilever release performed?

Ans- For releasing the cantilever, ICP etching of silicon with SF_6 at very low temperatures and at very low pressures was used to produce isotropic etch profiles of silicon as shown in Figure, which help the cantilever to be released from the substrate. 700 sscm of SF_6, coil power of 2600 W and pressure of 100 mTorr at temperature 18C° were applied for silicon etching.

Q- How to address non-linearities of MEMS cantilever beams?

Ans- Non-linearities in MEMS (Micro-Electro-Mechanical Systems) cantilever beams is essential for improving their performance and reliability. It can arise from various sources, including material properties, geometry, and operating conditions. The specific approach will depend on the nature of the non-linearities, the application, and the available resources. Here are some approaches to address non-linearities in MEMS cantilever beams like Design Optimization, Material Selection, Pre-Stress Control, Operational Parameters, Feedback Control, Modeling and Simulation, Sensing Techniques, Calibration and Compensation, Advanced Control Strategies, Experimental Validation.

Q- What is the expected sensitivity of the sensor?

Ans- The piezoelectric sensor was designed such that the voltage generated is on scale of mV. The voltages generated for the micro cantilever were in the range of 11 to 39 mV. This range of voltage is suitable for sensing electronic systems. Increase in thickness of piezoelectric layer results in increase in generated voltage. This research improves the design and performance of piezoelectric sensors by specifying the primary design parameters for optimal sensor functionality.
As this paper is small conference paper and we are still investigating these micro cantilevers and sensitivity measurement will be our next target which we have plan to submit it in the full journal paper.

Q- Give examples of use of micro-cantilevers in gas sensors

Ans- Microcantilevers are widely used in gas sensors due to their sensitivity and ability to detect various gases. Some examples of how micro cantilevers are employed in gas sensing applications are Chemical Gas Sensing, Environmental Monitoring, Biomedical Gas Sensing, Industrial Process Control, Food Quality Assurance, Explosive and Hazardous Gas Detection, Oil and Gas Industry, Personal Gas Monitors, Volatile Organic Compounds (VOCs) Detection, Remote Sensing Applications. Micro cantilever-based gas sensors offer high sensitivity, rapid response times, and the ability to detect a wide range of gases. They are widely used in diverse applications where accurate and reliable gas detection is crucial for safety, environmental protection, and health monitoring.