

**V₂O₅/V/V₂O₅ 다층박막 및 MEMS기술을 이용한 비냉각형 적외선
감지 소자의 제작
(V₂O₅/V/V₂O₅ based uncooled infrared detector by MEMS technology)**

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Surface micromachined uncooled IR detector with the optimized VOx bolometric layer was fabricated based on sandwich structure of the V₂O₅/V/V₂O₅. In order to improve the detectivity of the IR detector, we optimized a few factors in the viewpoint of bolometric material. Vanadium oxide thin film is a promising material for uncooled microbolometers due to its high temperature coefficient of resistance at room temperature. It is, however, very difficult to deposit vanadium oxide thin films having high temperature coefficient of resistance and low resistance because of process limits in microbolometer fabrication. In order to increase the responsivity and decrease noise, we increase TCR of bolometric material and decrease room temperature resistance based on the sandwich structure of the V₂O₅/V/V₂O₅ by conventional sputter. By oxygen diffusion through low temperature annealing of V₂O₅/V/V₂O₅ in oxygen ambient, various mixed phase vanadium oxide was formed and we obtained TCR in range of -1.2 ~ -2.6%/°C at room temperature resistance of 5 ~ 100kΩ.

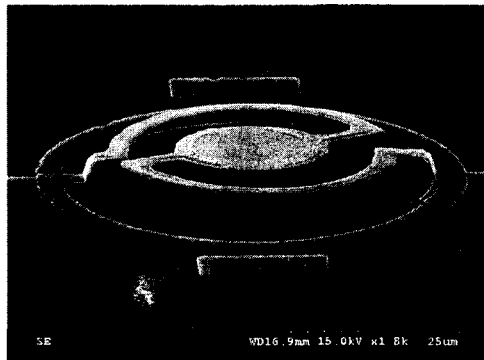


Fig. Microbolometer fabricated by surface micromachining