



CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

In this study we fabricated and characterized gas sensors with a new type of filler called “carbon aerogel” from polybenzoxazine based precursor using polydimethylsiloxane (PDMS) as the polymer matrix. Carbon aerogel (CA) is a novel nano-sized porous carbon material with highly cross-linked structure, high surface area and high-electrical conductivity. It is found that different types of polybenzoxazine used as organic precursors for carbon aerogel applications have no significant effect on the response of the sensor to the analysts. By mixing only 8 wt% of the carbon aerogel, the percolation threshold was obtained, showing that carbon aerogel is a mesoporous material with excellent conductivity and high surface area. Both CA/PDMS composites were able to produce large resistivity responsivity against various organic vapors because of adsorbing more organic vapors.

For future development, other polymer matrixs such as polystyrene, poly (vinyl alcohol), polybutadiene should be considered.