CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

In this study, we have demonstrated the synthesis and characterization of gas sensing materials which were produced by a new type of filler called CA using PVA and PB as matrices. In this work, CA was made from polybenzoxazine based precursor which provides high crosslink density and char yield as 39 %wt to construct CA. In order to have a higher pore volume and surface area, the CA was activated.

On the basis of this study, the following conclusions can be drawn:

1. In the present of activated CA in composite film, the adsorbed gas on composite film was higher comparing to pure polymer film and composite film with graphite as a filler, resulting in the higher responses of this composite upon exposure to organic gas vapors. Further more, the gas sensing material based on activated CA show excellent reproducibility.

2. The response of activated CA/PB films was higher when the composites were exposed to non-polar solvents like toluene and hexane. But their response was low to moderate acetone, and no response with high polar solvent such as water due to the hydrophobic nature of the polymer matrix.

3. The response of activated CA/PVA films were high when the composites were exposed to high polar water was highest and moderate to acetone. On the other hand, the composite showed low response to non-polar hexane and no response to non-polar toluene due to the hydrophobic nature of the polymer matrix.

The other important property of commercial gas sensor is duration; how long the composite has a gas sensing property. Therefore, the duration of each gas sensing material should be measured and improved.