CHAPTER V

CONCLUSION

In this research, the wood-polymer composites that prepared from rubber wood impregnated with 2-HPA, BA and 2-EHA could improve the physical and mechanical properties of rubber wood. The preparation method was carried out by impregnation the rubber wood with monomers under reduced pressure and curing with heat treatment. The optimum condition for rubber wood-composites are shown in Table 5.1.

Table 5.1 The suitable condition in preparation of rubber wood-composites

	2-HPA	BA	2-EHA
Benzoyl peroxide (phr.)	2	2	1
Evacuating time (hours)	1	2	2
Soaking time (hours)	4	4	4

Rubber wood-composites from 2-HPA, BA and 2-EHA obtained under suitable condition gave higher polymer loading and improved properties. Rubber wood-2-HPA composites showed the lowest water absorption at 22.18 percent and rubber wood-2-EHA composites gave the highest antiswell efficiency at 41.52 percent.

For mechanical properties, rubber wood-2-EHA composites gave the higher modulus of elasticity and flexure stress at 8412 and 130.3 MPa, respectively whereas rubber wood-2-HPA composites showed at 7364 and 119.2 MPa and rubber wood-BA composites showed at 7013 and 117.6 MPa, respectively. Moreover, modulus of elasticity and flexure stress of these composites were better than untreated rubber wood, red wood and teak wood.

Rubber wood-2-HPA composites showed the highest compression at 75.02 N/mm^2. Rubber wood–BA and 2-EHA composites gave compression at 65.51 and 63.32 N/mm^2, respectively. Although they gave lower compression when compared with red wood and teak wood, they had compression more than untreated rubber wood.

After termite resistant testing of rubber wood-polymer composite compared with untreated rubber wood, red wood and makah-mong, the results showed that rubber wood-polymer composites completely resisted termite attack as well as red wood and makah-mong.

The microstructure investigation of impregnated rubber wood showed that the lumen of wood could be fully filled with polymer compared with untreated rubber wood and consequently resulting in the improvement of physical and mechanical properties.

5.1 Suggestion and future work

1. From this study, it was expected that the amount of carbon in acrylate chain improved the flexibility and functional group such as hydroxyl group in the structure of acrylate could improve compression. Making wood-polymer composites with long chain acrylate and other functional group should be explored.

2. Modification of large scale impregnation process to prepare bigger specimen should be investigated.

3. Wood–polymer composite using copolymerization should be investigated.