CHAPTER 5

CONCLUSIONS

5.1 CONCLUSIONS

In kneading parameters affecting the dispersion of pigment in polyethylene are conclude as follows :

1. Regarding the kneading temperature effect, the higher temperature led to improved dispersibility. However, above 200 °C the process became more of a mixing process rather than a dispersion one because of the greater fluidity. The suitable kneading temperature is 200 °C.

2. The intensity of the shear stress increased as the rotational speed of the screw increased. Thus the higher rotational speed of the screw, the higher the dispersibility. The highest rotational speed studied is 324 rpm.

3. Pigment dispersibility was independent of the roller temperature, which only affected the internal structure of the kneaded material.

4. Regarding the effect of particle size of pigment, the larger the particle size, the higher the dispersibility. The largest particle size of pigment studied is 0.2 μm.

5. A suitable magnifying power is necessary for accurate evaluation of dispersibility using the fractal dimension. In the study, the observed micro-photograph should preferably contain more than 500 particles, or less than 300 particles.

5.2 RECOMMENDATIONS FOR FUTURE

Since dispersion is an important operation in plastics industry, it will be interesting to extend the present study. There are other parameters that should be investigated, such as the type of polymers, the type of pigments used, premixing and so on. In addition, some simple and convenient methods to evaluate dispersibility should be developed, which may or may not depend on fractal analysis.