CHAPTER V
CONCLUSIONS

The ethylene-methacrylic acid copolymer partially neutralized with sodium (Na-EMAA) had been shown by a morphological and thermal investigation to behave as an effective compatibilizer for Ny6/LDPE blends. Addition of small amounts of Na-EMAA reduce the dispersed phase size by approximately a factor 5, and as little as 0.5 phr of Na-EMAA was sufficient to produce a maximum reduction of dispersed phase size. The ionomers thermally stabilized both Ny6 and LDPE; the 80/20 Ny6/LDPE compatibilized with 0.5 phr of Na-EMAA gave the highest decomposition temperature, ca. 16°C higher than pure Ny6. It has been established that the thermal stability of compatibilized blends increases, as well as the better dispersion and the smaller dispersed phase size, attributed to the strong intermolecular interactions between Ny6 and Na-EMAA, which confirmed by Molau test. The presence of Na-EMAA decreased the crystallization temperature of Ny6, indicating that Na-EMAA retarded nylon crystallization. Melting point depression phenomenon was found in both Ny6 and LDPE phases in the ternary blend, although the reasons for the depression was different. In the former case, the reason was attributed to the strong interaction between Ny6 and the ionomers which reduced both the fractional crystallinity and crystallite perfection, in the latter case the reason was attributed to short ethylene segment incorporation from the ionomers into polyethylene crystals. Compared to our previous work, the Na^+ carboxylate ionomers are a more effective compatibilizer than the Zn^{2+} ionomers; however the copolymer itself was different between the Na^+ and Zn^{2+} materials so the comparison between the two cations is a direct one. Still however, this work shows that sodium-neutralized materials do serve as effective compatibilizers for nylon and LDPE.