（様式 5）

２０２０年１２月　７日
Year　Month　Day

学位（博士）論文要旨

(Doctoral thesis abstract)

論文提出者 (Ph.D. candidate)	工学府博士後期課程　応用化学専攻 (major) ２０１８年度入学(Admission year) 学籍番号　１８８３２２０４　氏名　奈良　早織 (student ID No.)　(Name)
主指導教員氏名 (Name of supervisor)	斎藤　拓
論 文 題 目 (Title)	High Performance Poly(phenylene sulfide) Blend

論文要旨

Poly(phenylene sulfide) (PPS) is a high-performance super-engineering plastic which exhibits high thermal stability, excellent chemical resistance, and good mold precision. However, PPS has serious disadvantages of its low toughness and low impact resistance. In addition, injection molding is difficult because there is a small difference between the melting temperature and melt crystallization temperature (T_{mc}), and PPS solidifies quickly. In this thesis, I described improvement of impact resistance of PPS and control of the crystallization behavior by blending different kind of polymers. It was found that the T_{mc} of PPS was lowered and the tensile elongation was improved by blending poly(phenylsulfone) (PPSU) due to the improvement of the interfacial adhesion owing to the partial miscibility between PPS and PPSU. Small-angle X-ray scattering measurements revealed that the PPSU chains were intruded into the amorphous region between the PPS crystal lamellas due to the partial miscibility between PPS and PPSU. Super-tough PPS-based blends were successfully generated by melt blending PPS with poly(ethylene-*ran*-methacrylate-*ran*-glycidyl methacrylate) (EGMA) and PPSU. It was demonstrated that the interfacial reaction between PPS and EGMA and partial miscibility between PPS and PPSU, both play important synergistic roles. It was found for the first time that the crystallization of PPS was significantly delayed and the T_{mc} decreased by blending with a very small amount of poly(*N*-vinylpyrrolidone) (PVP), although the blends were phase-separated. The delay in crystallization is likely attributed to the partial miscibility resulting in the entanglement of PVP chains in the crystalline growth front of PPS.