Supporting Information

Gas Separation Membranes Made through Thermal Rearrangement of *ortho*-methoxypolyimides

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Abbreviations

PI-OH	Polyimide membrane with ortho-positioned OH group
TR-OH350	Polyimide membrane with ortho-positioned OH group heated at 350 °C for 1h
TR-OH400	Polyimide membrane with ortho-positioned OH group heated at 400 °C for 1h
TR-OH450	Polyimide membrane with ortho-positioned OH group heated at 450 °C for 30 minutes
PI-OAc	Polyimide membrane with ortho-positioned OAc group
TR- OAc350	Polyimide membrane with ortho-positioned OAc group heated at 350 °C for 1h
TR- OAc400	Polyimide membrane with ortho-positioned OAc group heated at 400 °C for 1h
TR- OAc450	Polyimide membrane with ortho-positioned OAc group heated at 450 °C for 30 minutes
PI-OMe	Polyimide membrane with ortho-positioned OMe group
TR- OMe350	Polyimide membrane with ortho-positioned OMe group heated at 350 °C for 1h
TR- OMe400	Polyimide membrane with ortho-positioned OMe group heated at 400 °C for 1h
TR- OMe450	Polyimide membrane with ortho-positioned OMe group heated at 450 °C for 30 minutes

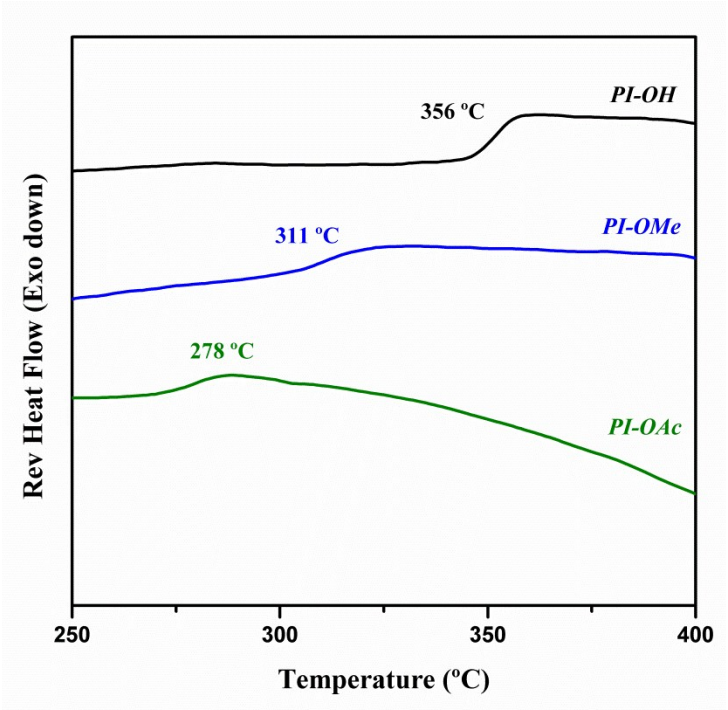

Fig. S1. Glass transition temperatures of precursor polyimides determined by MDSC.

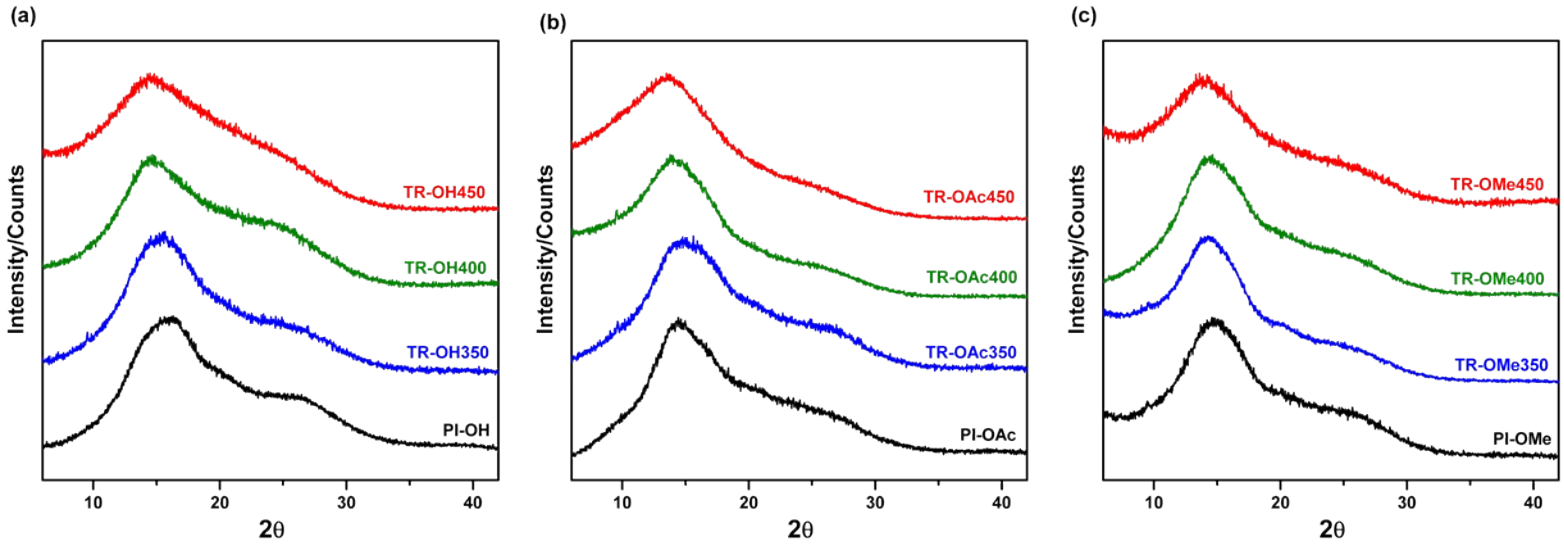

Fig. S2. Wide angle X-ray diffraction (WAXD) patterns of (a) PI-OH, (b) PI-OAc and (c) PI-OMe precursor polyimides along with the TR derived membranes, treated at different temperatures and heating times.

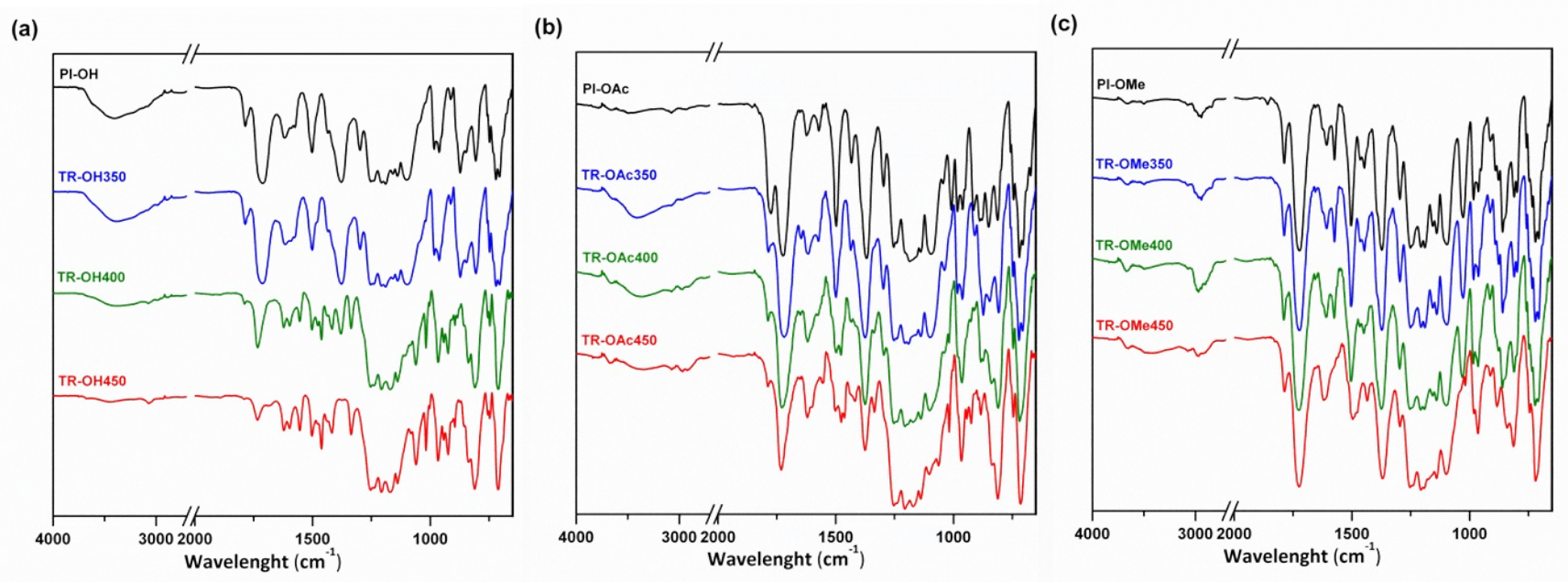

Fig. S3. ATR-FTIR spectra of (a) *PI-OH*, (b) *PI-OAc* and (c) *PI-OMe* precursor polyimides and thermally rearranged analog membranes, treated at different temperatures and heating times.