

Supporting Information

Degradation behavior of polypropylene and its biocomposites during reprocessing: thermal and oxidative degradation kinetics

Elnaz Esmizadeh, Costas Tzoganakis, and Tizazu H. Mekonnen*

*Department of Chemical Engineering, Institute of Polymer Research, University of Waterloo,
Waterloo, ON, Canada*

*Corresponding Author(s) – E-mail: tmekonnen@uwaterloo.ca

Content

- S1. Chemical variation of PP after the recycling process
- S2. The effect of processing cycle number on mixing torque and melt flow index of PP
- S3. The effect of reprocessing cycles on the degradation of PP at heating rates of 10 oC/min and 40 °C/min
- S4. The convoluted PP degradation peak and the calculated degree of conversion evolution for PP^vW60 sample under the inert and reactive atmosphere

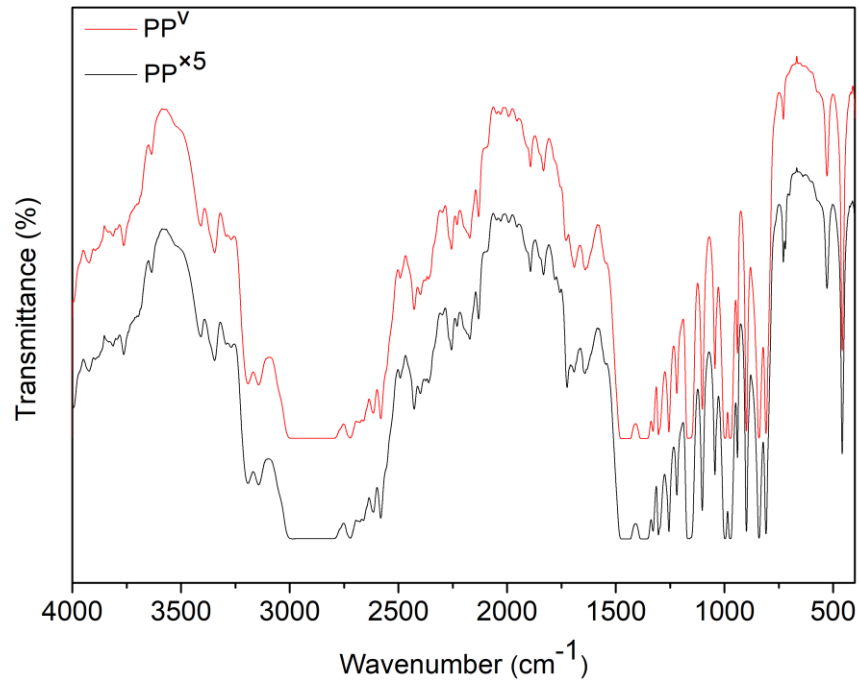


Figure S1. FTIR spectrum of PP and its recyclates

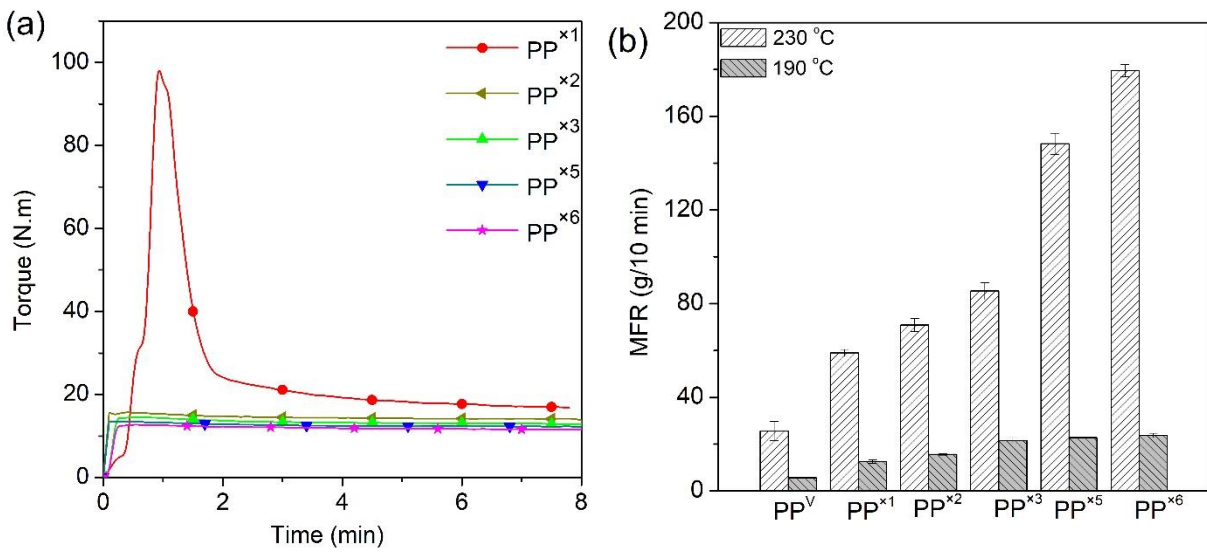
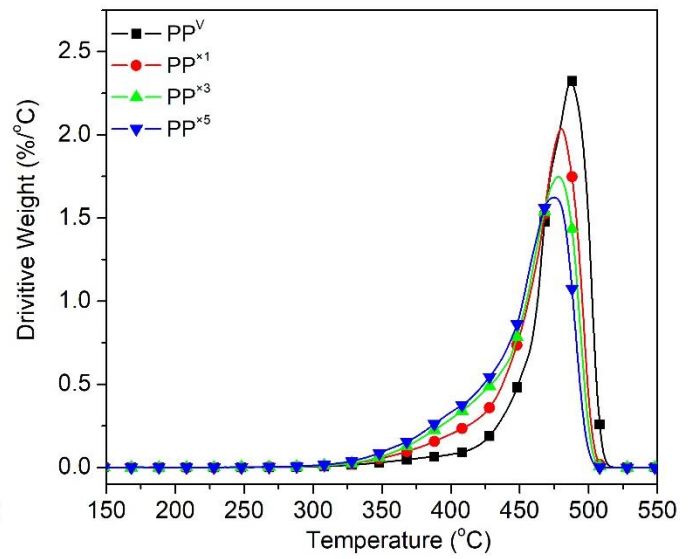
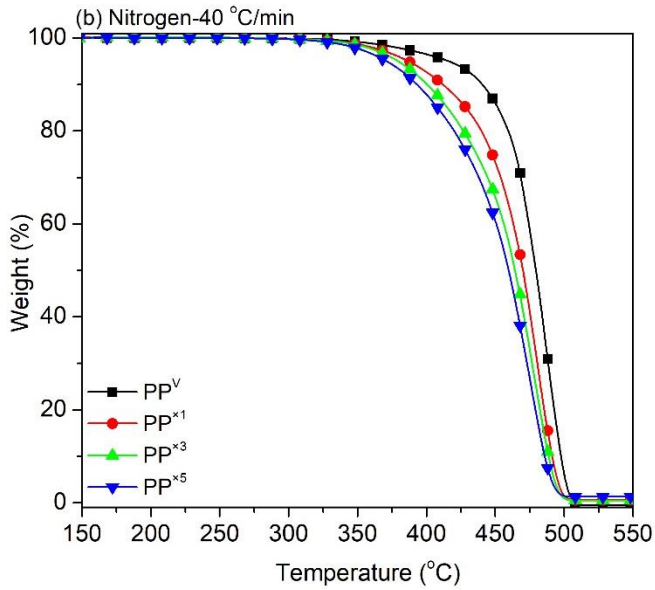
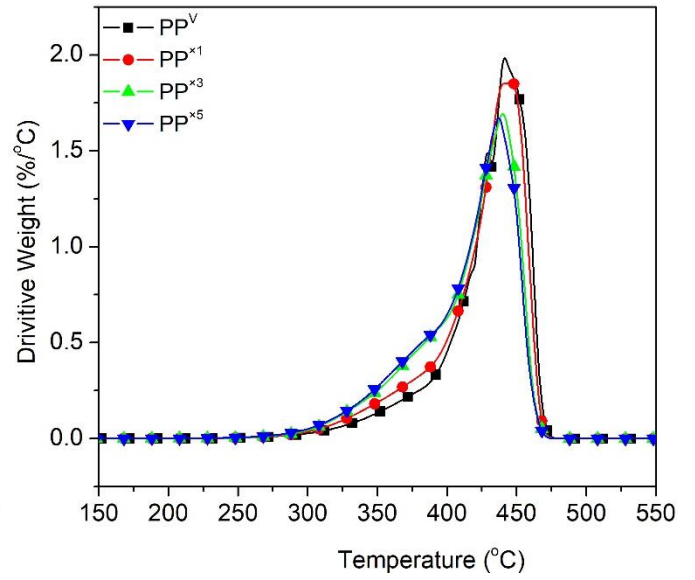
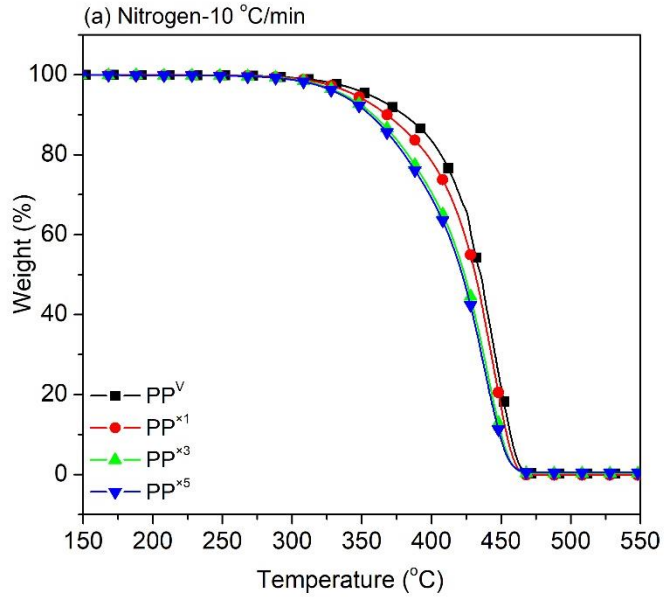


Figure S2. Processing of polypropylene (a) Evolution of torque and (b) MFR of PP as a function of the number of processing cycles



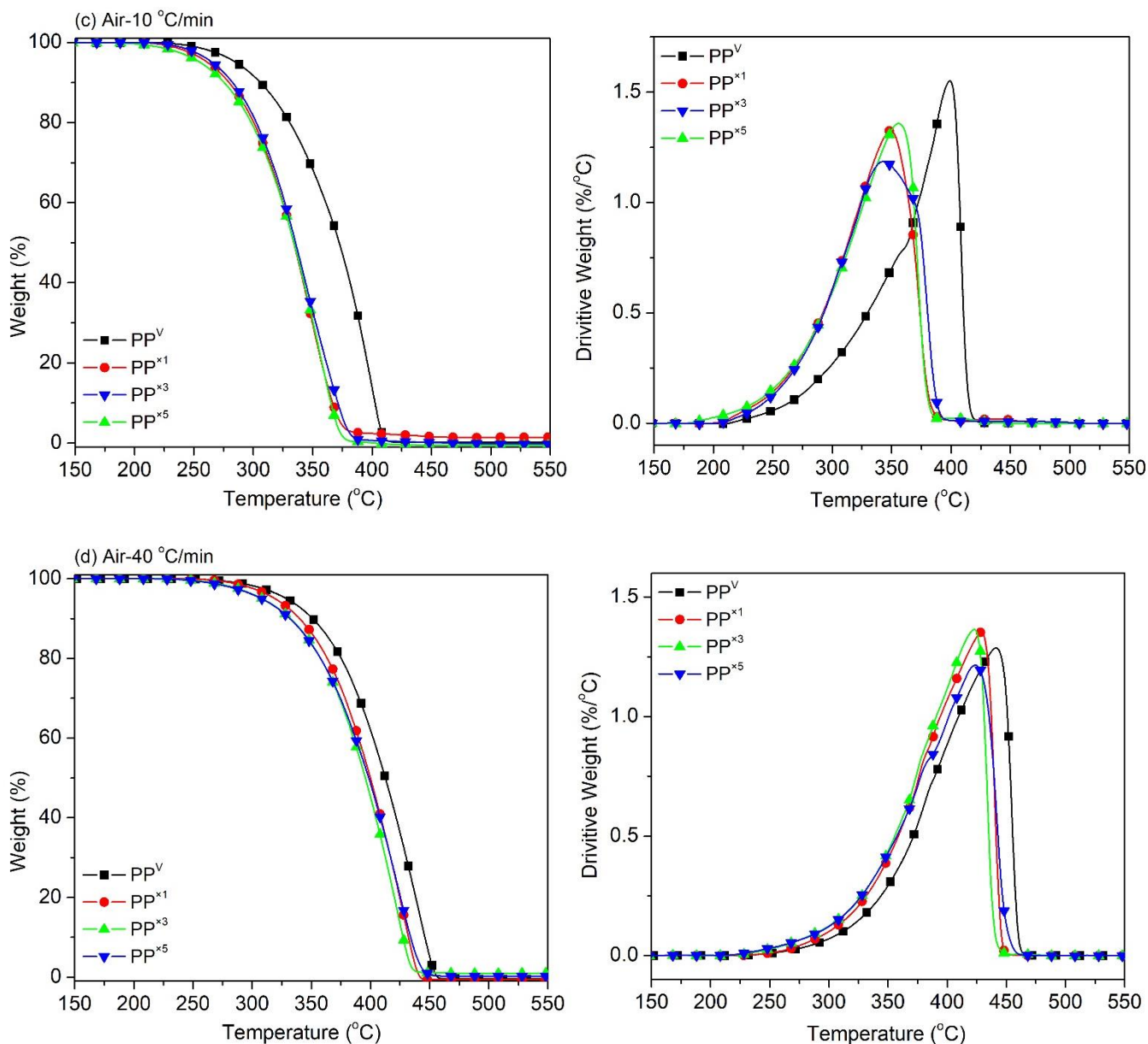


Figure S3. TG and DTG curves for the effect of reprocessing cycles on the decomposition of PP at various heating rates: (a) 10 °C/min under N₂, (b) 40 °C/min under N₂, (c) 10 °C/min under the air, (d) 40 °C/min under O₂

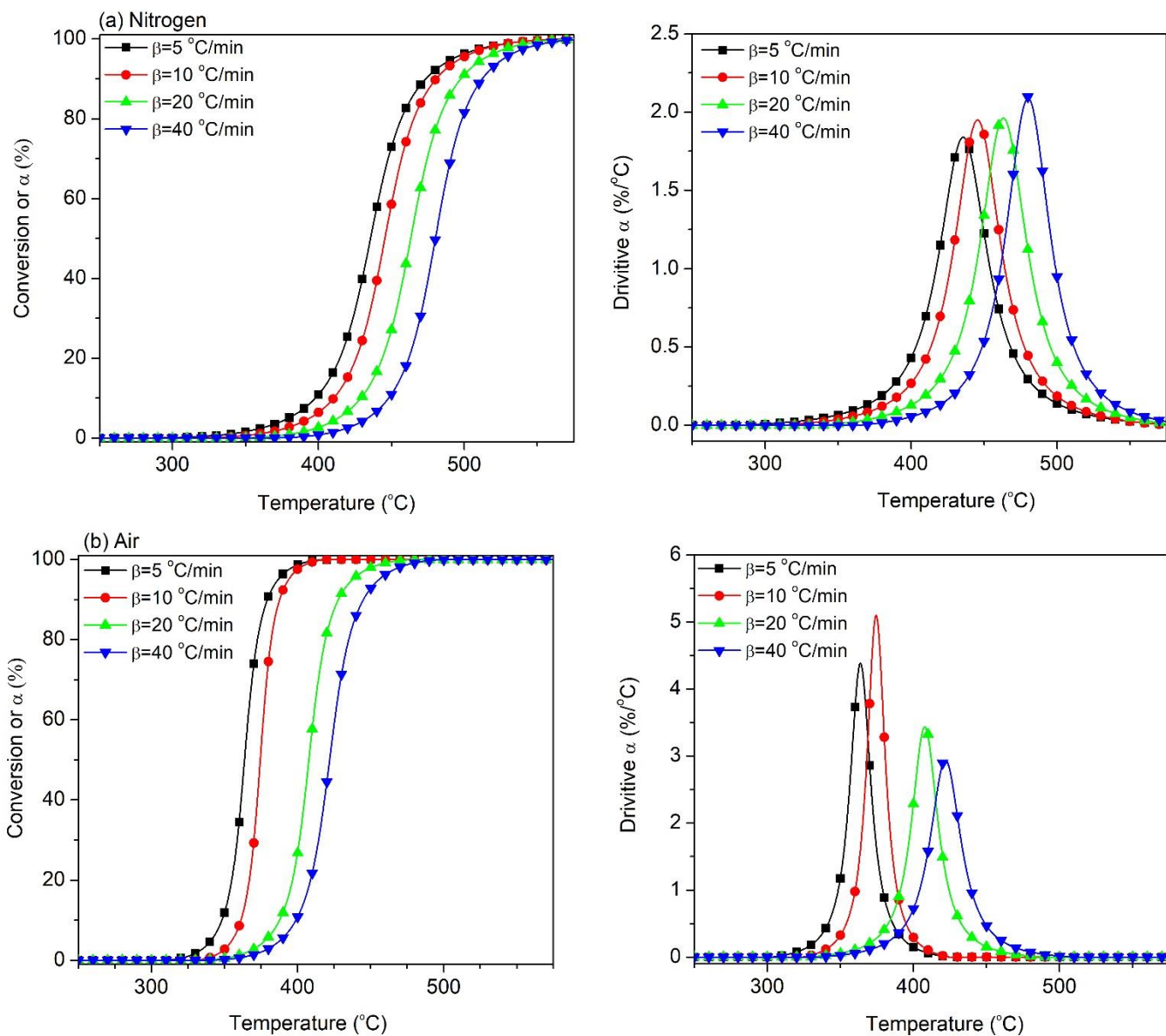


Figure S4. Separated PP degradation obtained from deconvolution of PP^VW60 under different atmospheres: (a) Nitrogen, (b) Air