Electronic Supplementary Material (ESI) for Green Chemistry.
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Recycling of bonded NdFeB permanent magnets using ionic liquids

Mehmet Ali Recai Önal, Sven Dewilde, Malik Degri, Lydia Pickering, Boris Saje, Sofía Riaño, Allan Walton, and Koen Binnemans*

Electronic Supplementary Information (ESI)

Infrared analysis results of bonded NdFeB magnets

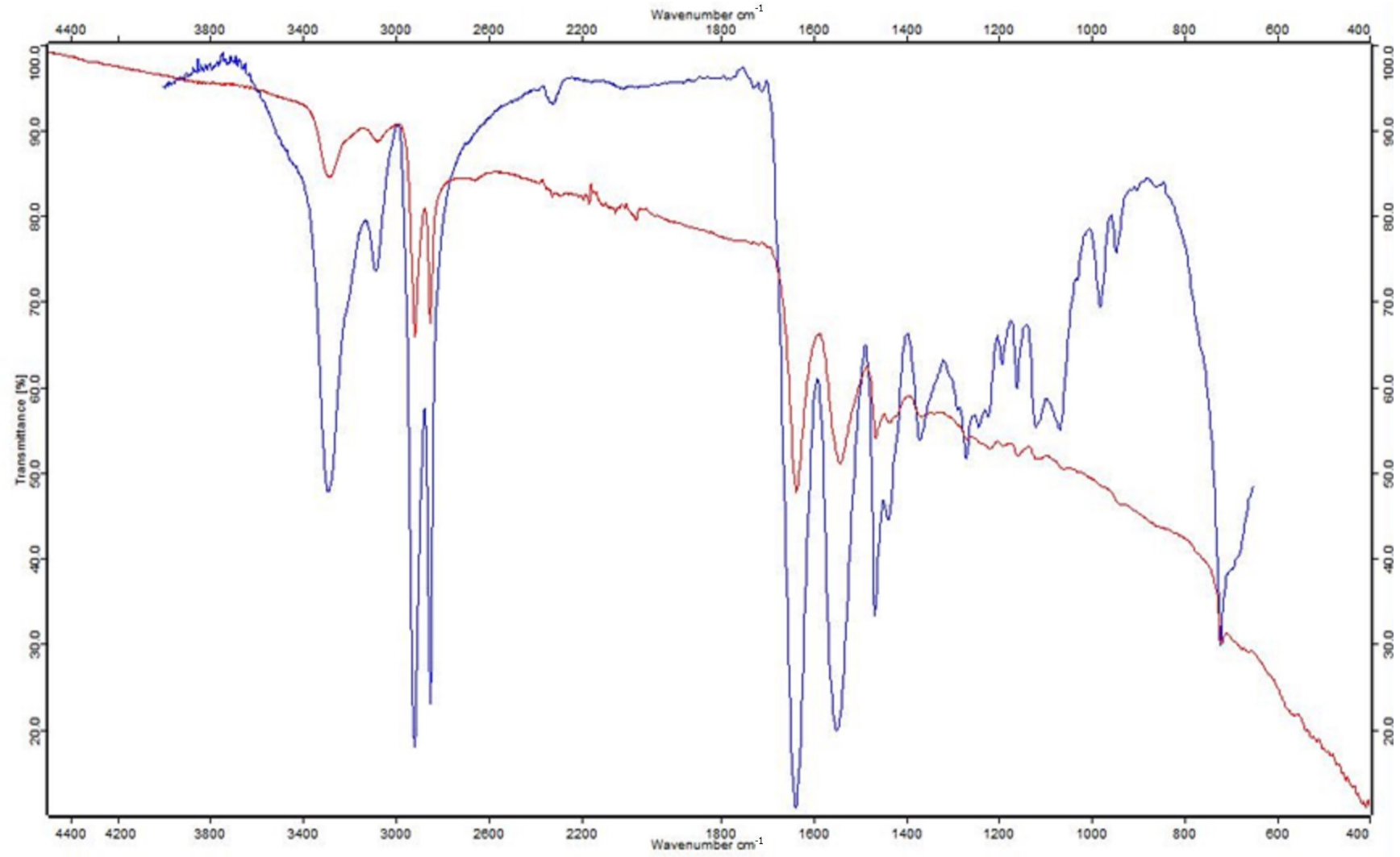

Figure S1. FTIR spectrum of magnet sample #1 in Table 1 (red) and polyamide 12 pattern from the database (blue).

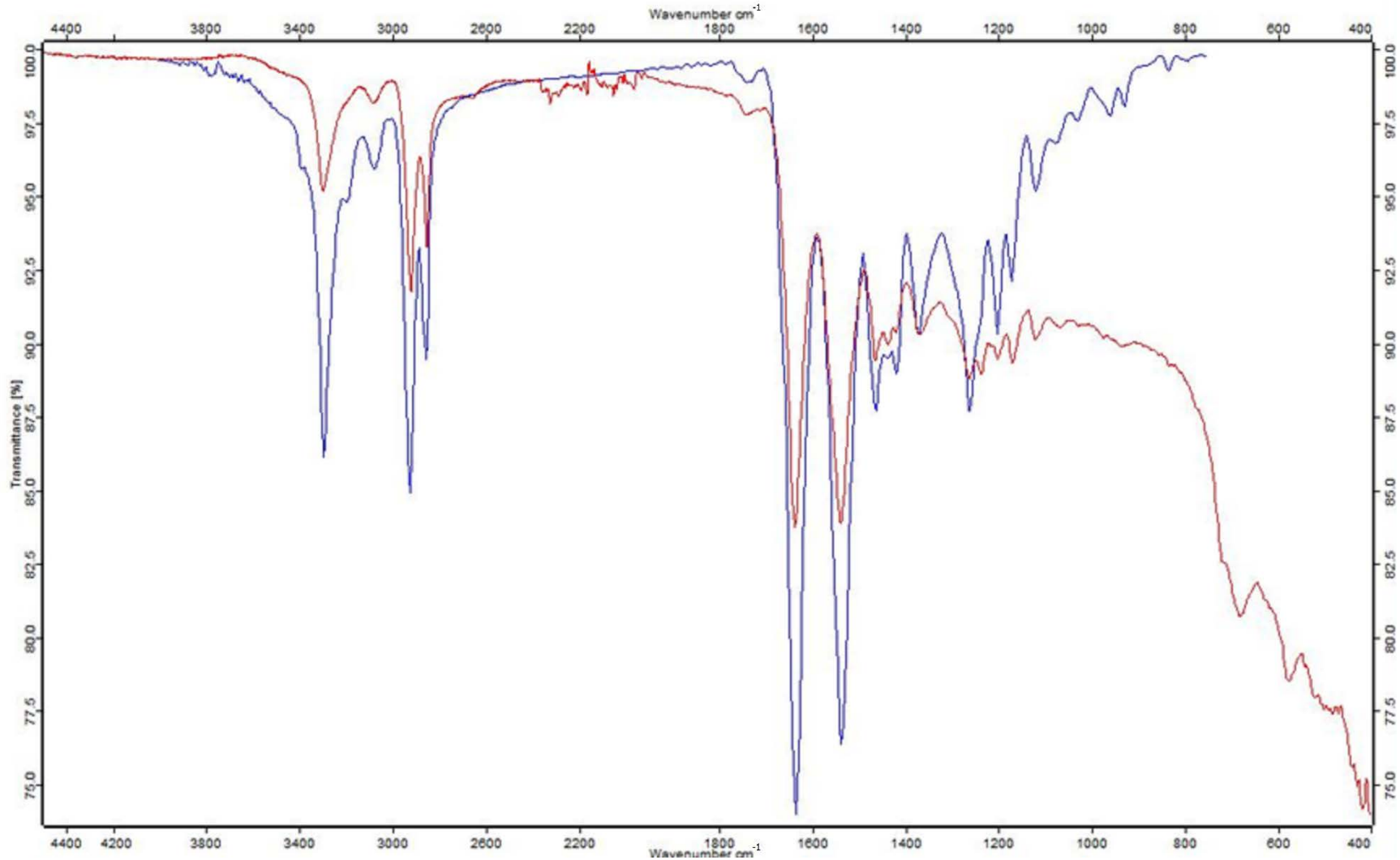

Figure S2. FTIR spectrum of magnet sample #3 in Table 1 (red) and polyamide 6 blended with trilene XL pattern from the database (blue).

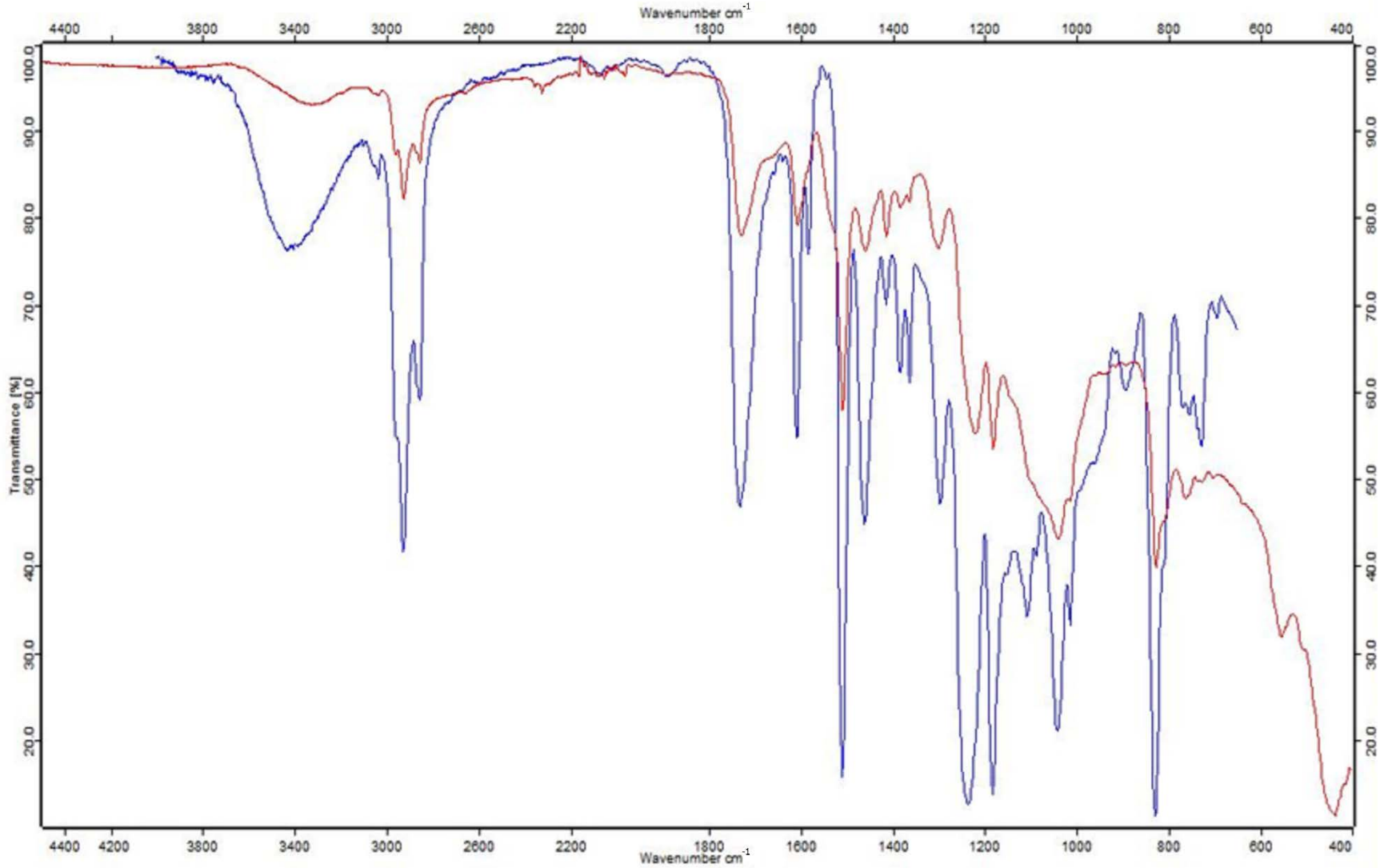

Figure S3. FTIR spectrum of magnet sample #6 in Table 1 (red) and epoxy pattern from the database (blue).

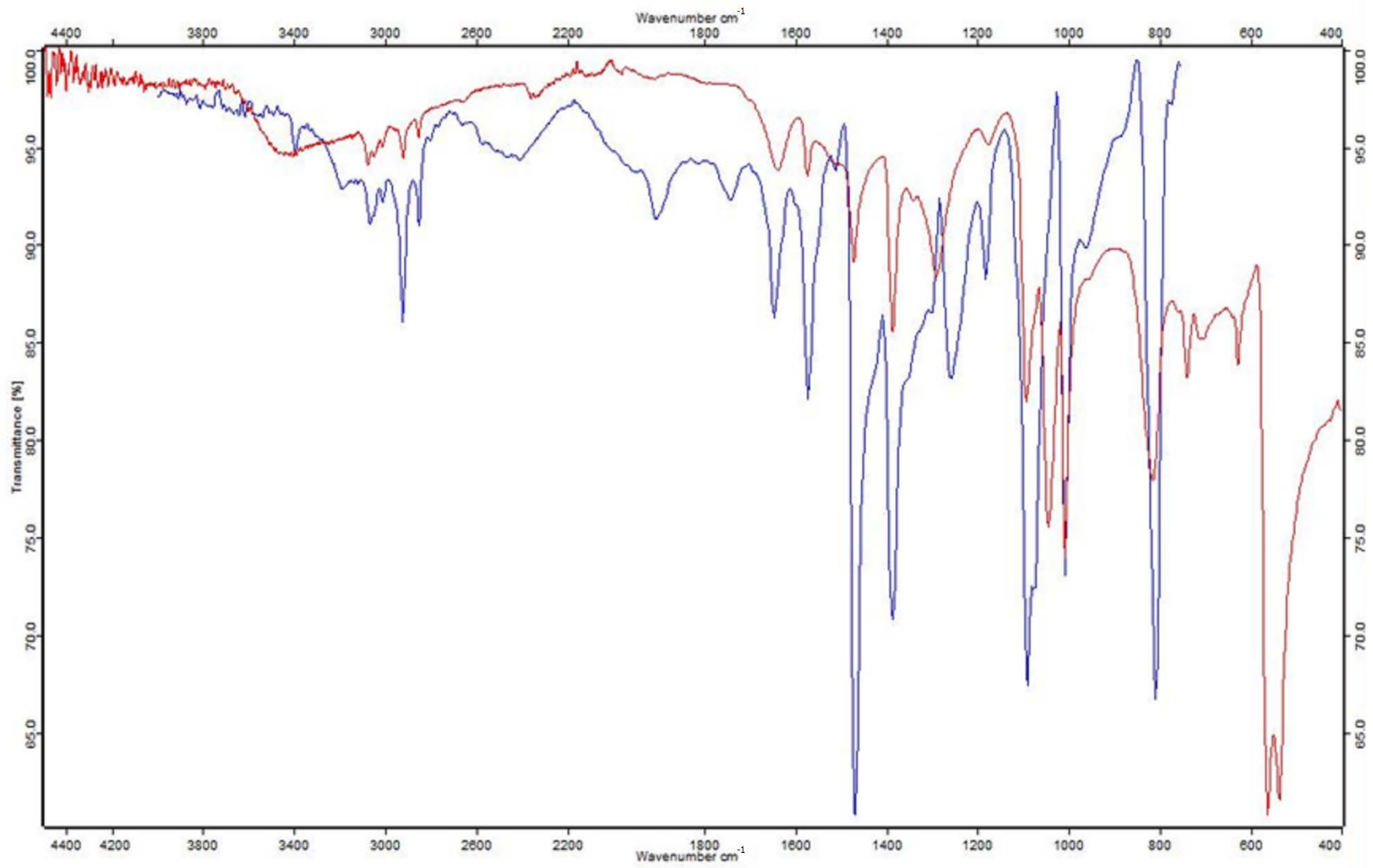

Figure S4. FTIR spectrum of magnet sample #9 in Table 1 (red) and poly-p-phenylene sulfide pattern from the database (blue).

Thermogravimetric analysis results for bonded NdFeB magnets

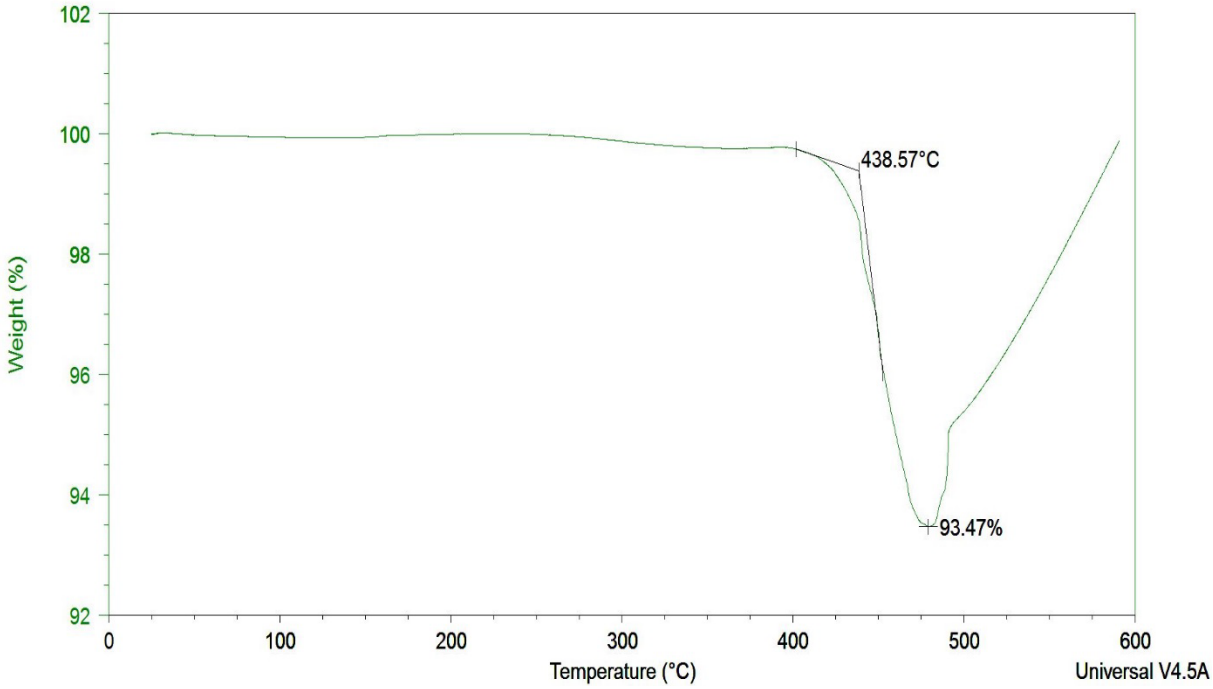

Figure S5. Thermogravimetric curve of magnet sample #1 (polyamide 12) in Table 1.

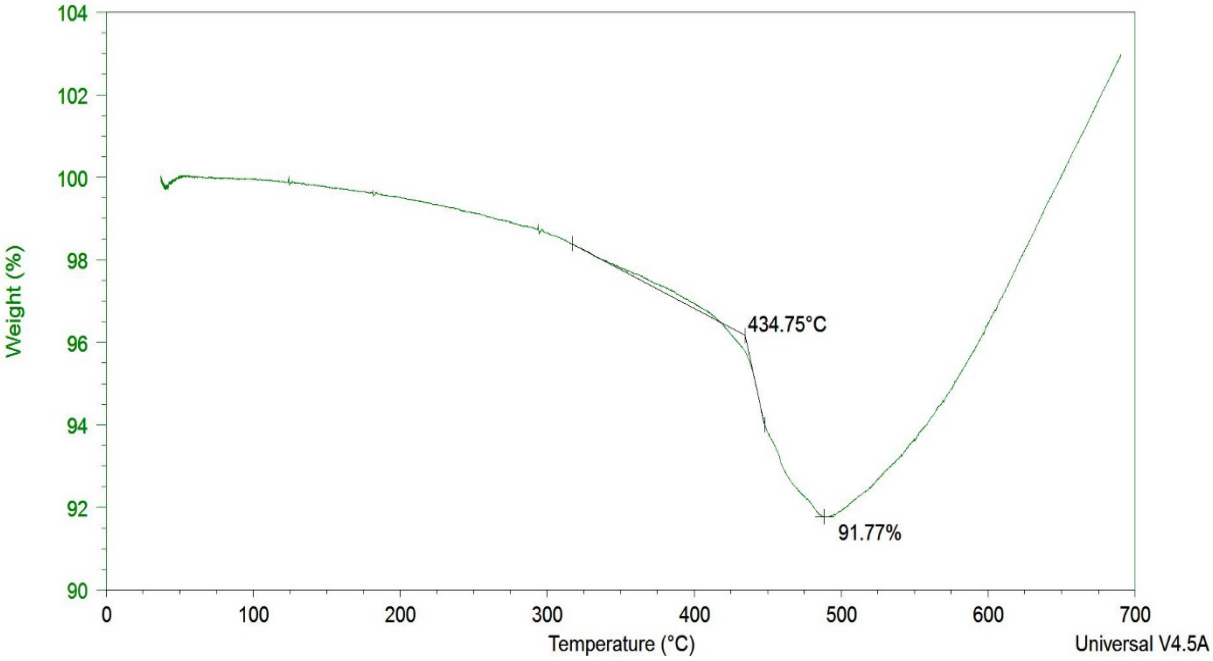

Figure S6. Thermogravimetric curve of magnet sample #3 (polyamide 6 blended with Trilene XL) in Table 1.

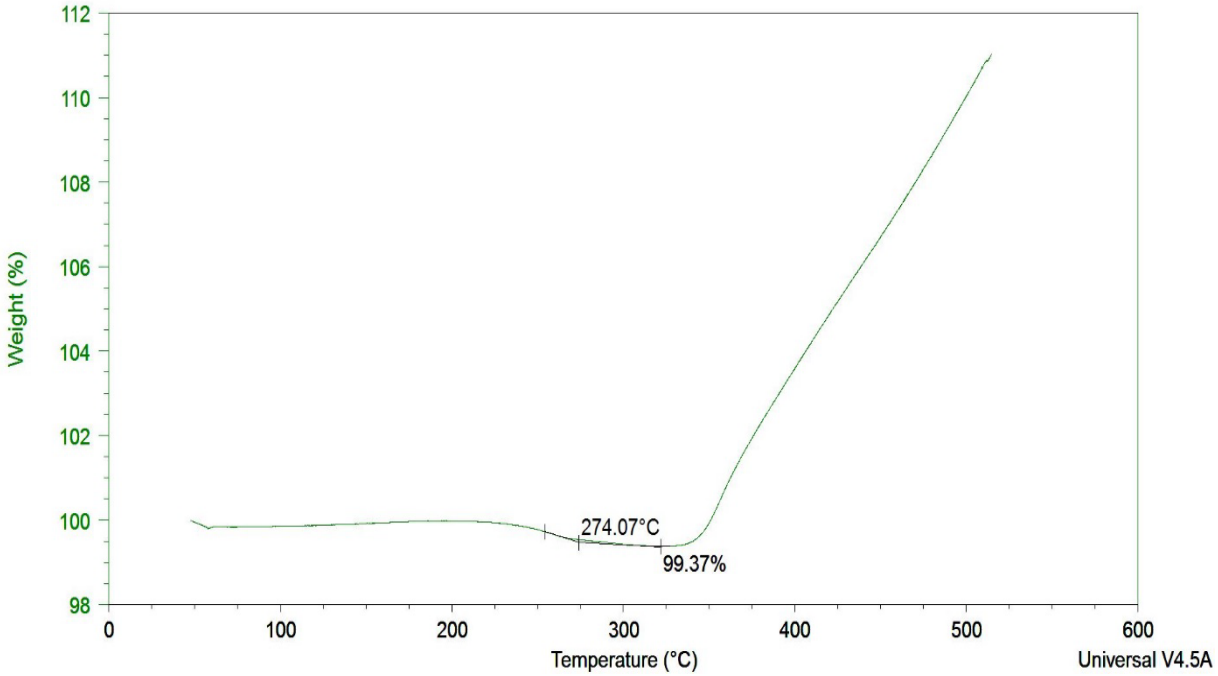

Figure S7. Thermogravimetric curve of magnet sample #6 (epoxy) in Table 1.

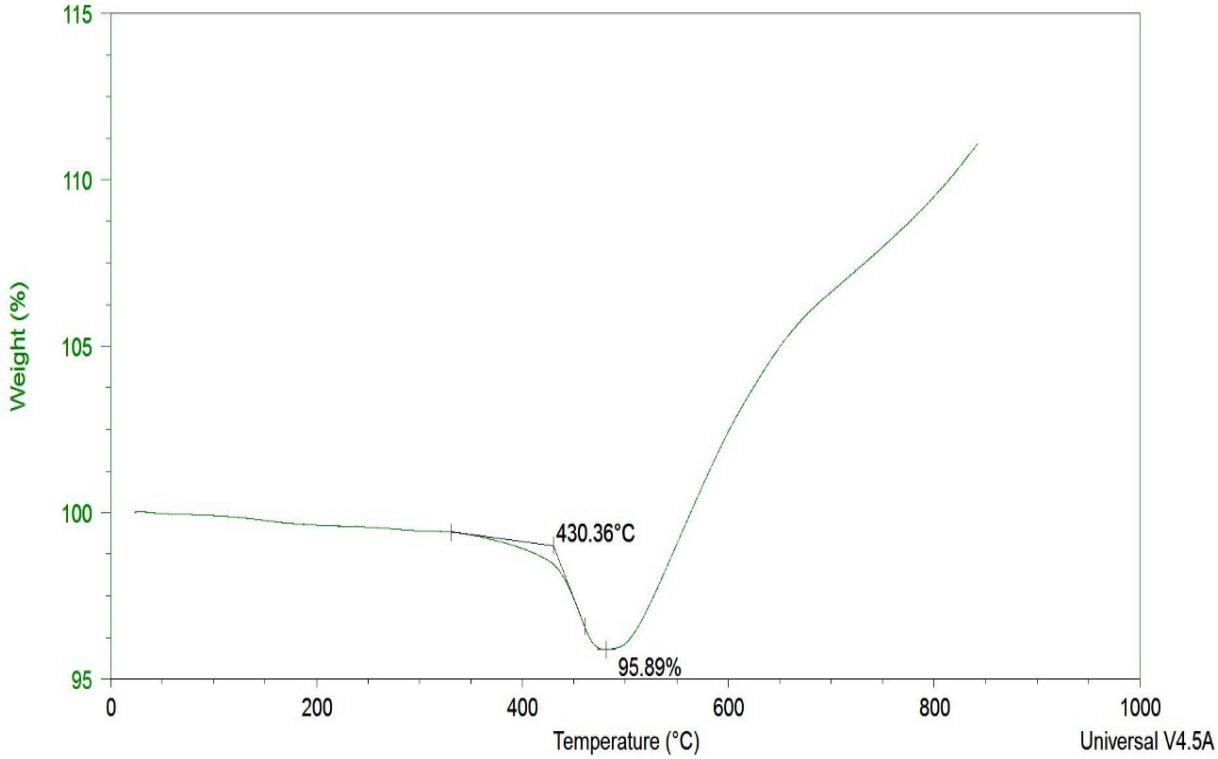

Figure S8. Thermogravimetric curve of magnet sample #9 (PPS) in Table 1.

^{1}H NMR analysis result of recovered $[P_{4442}][Et_2PO_4]$ solvent

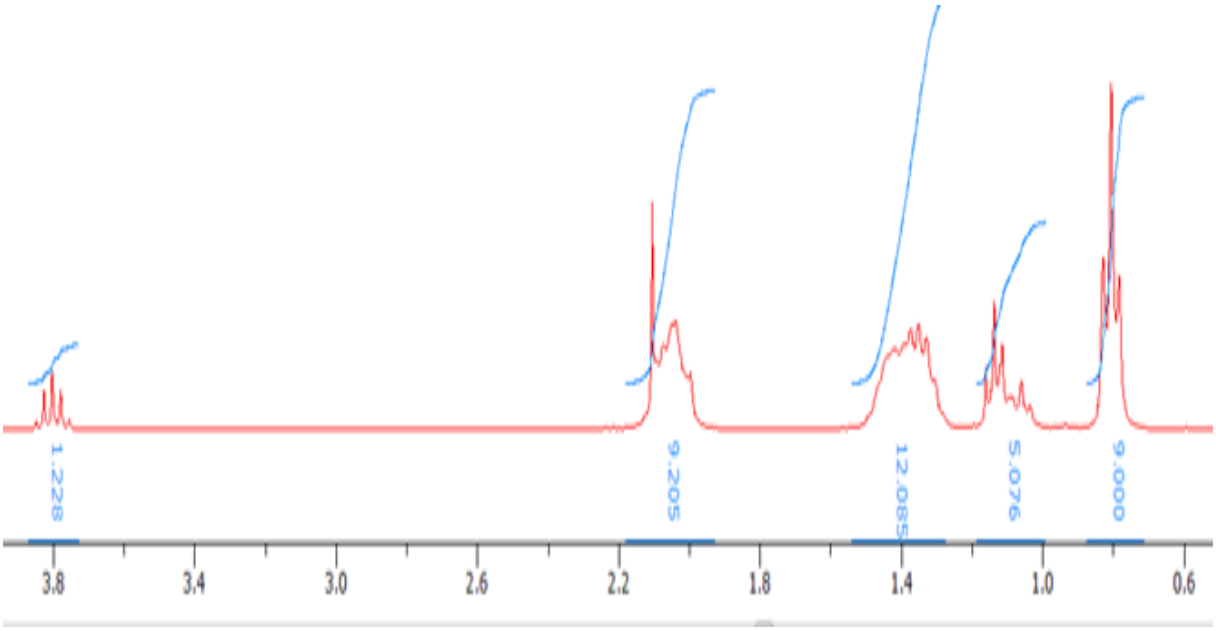

Figure S9. ^{1}H NMR of recovered $[P_{4442}][Et_2PO_4]$ after interaction with an epoxy-bonded magnet. There are not many phosphate anions present as there are phosphonium cations.

Pictures from dissolution experiments of bonded NdFeB magnets

Figure S10. Magnet powder obtained after refluxing an epoxy-bonded magnet in an aqueous NaOH solution. The powder shows clear signs of oxidation.

Figure S11. White precipitate of metal sulfates after dissolving PA12 from a PA12-bonded magnet by concentrated sulfuric acid.

Figure S12. Left: Resulting mixture after stirring bonded magnets in a hydrogen peroxide solution at 60 °C for several days. The bonded magnets fell apart and show signs of oxidation. Right: Recovery of polymers after dissolving the magnet powder in acid.