Magnetic Extraction of Weathered Tire Wear Particles and Polyethylene Microplastics

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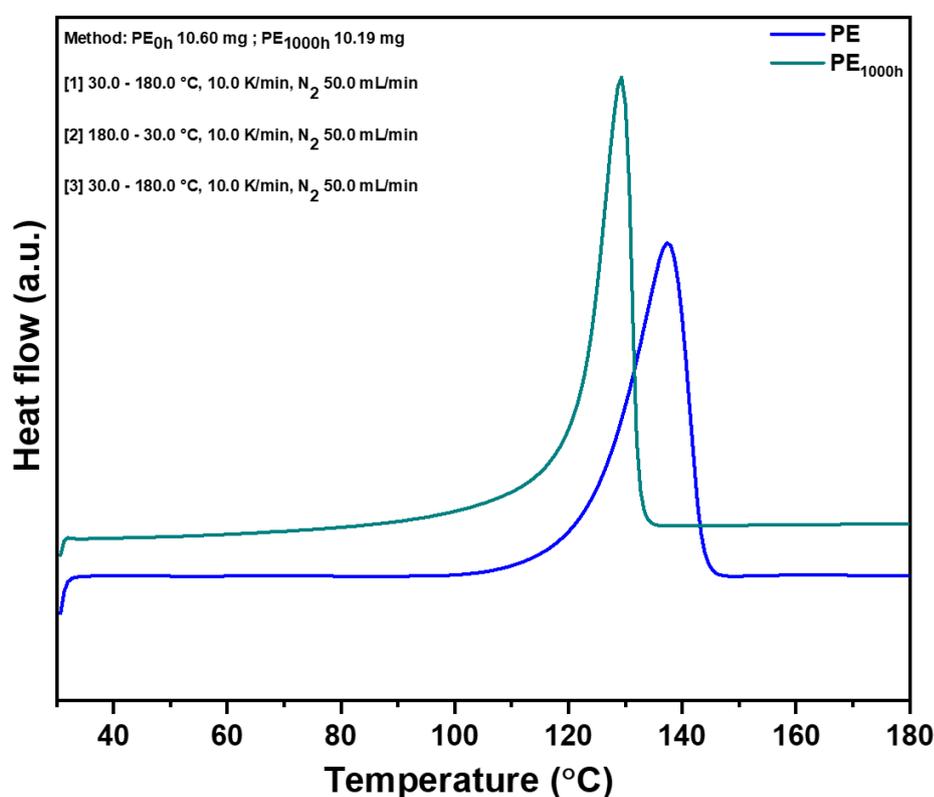2. Slovenian National Building and Civil Engineering Institute, Dimičeva ulica 12, 1000 Ljubljana, Slovenia

Figure S1. DSC of PE and weathered PE_{1000h}

The DSC of PE and weathered PE_{1000h} has been done with a Mettler Toledo, Greifensee, Switzerland TGA/DSC 1 thermogravimeter. The experiments were done in the temperature range of 30-180 °C in an environment of N_2, with a flow rate of 50 mL/min and a heating rate of 10 K/min. The crystallinity of the PE is calculated using the formula;

$$\text{Degree of Crystallinity } (\%) = \frac{\Delta H_m J/g \text{ (calculated)}}{\Delta H_m J/g \text{ (100\%)}} \times 100$$

The melting enthalpy of a 100% crystalline PE used for calculation is 293 J/g. The crystallinity of pristine PE and weathered PE_{1000h} is 74% and 68% respectively.
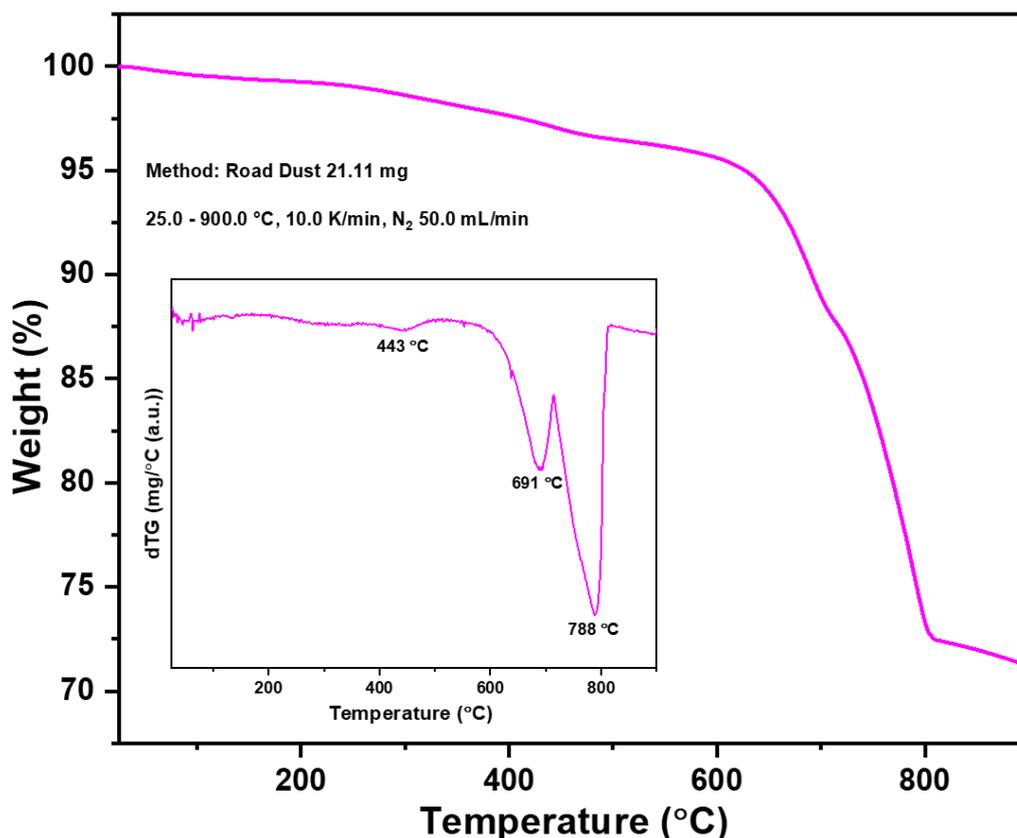

Figure S2. TGA of Road Dust. First differential is shown in the inset.

The TGA of road dust has been done with a Mettler Toledo, Greifensee, Switzerland TGA/DSC 1 thermogravimeter. The experiments were done in the temperature range of 25-900 °C in an environment of N_2, with a flow rate of 50 mL/min and a heating rate of 10 K/min. The first derivative shows a mild peak at 443 °C which could be from the degradation of tire rubber. The peak at 691 °C could be from carbon black originating from the tire or any other source in the dust sample. The most prominent peak at 788 °C might be due to some inorganic impurities in the dust sample.