Supplementary Information (SI) for Analytical Methods.

Accurate quantification of polyester in textiles through complete depolymerisation and HPLC

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SUPPLEMENTARY INFORMATION

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S1: UV-VIS SPECTRA OF TEREPHTHALIC ACID IN SOLUTION

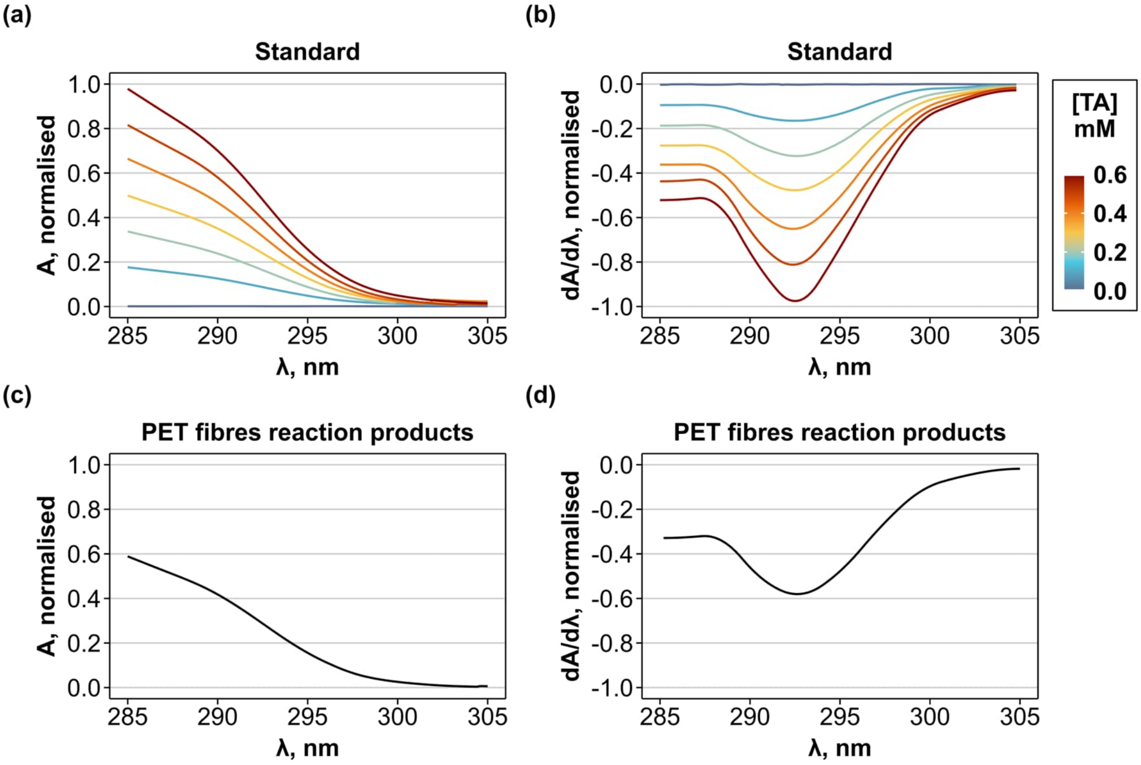

Figure S1. (a) UV-vis absorbance (A) as a function of the wavelength (λ) for terephthalic acid (TA) in solution (0.125 M KOH, 10% methanol by volume, 10% deionised water, and 80% of 0.25% w:v ammonia) at different concentrations; **(b)** derivative of the absorbance curves in (a) with respect to the wavelength; **(c)** UV-vis absorbance as a function of the wavelength for the depolymerisation products of poly(ethylene terephthalate) (PET) fibres in solution (0.125 M KOH, 10% methanol by volume, 10% deionised water, and 80% of 0.25% w:v ammonia); **(d)** derivative of the absorbance curves in (c) with respect to the wavelength. Values on the y axis were normalised for simplicity.

S2: STABILITY OF TEREPHTHALIC ACID IN SOLUTION

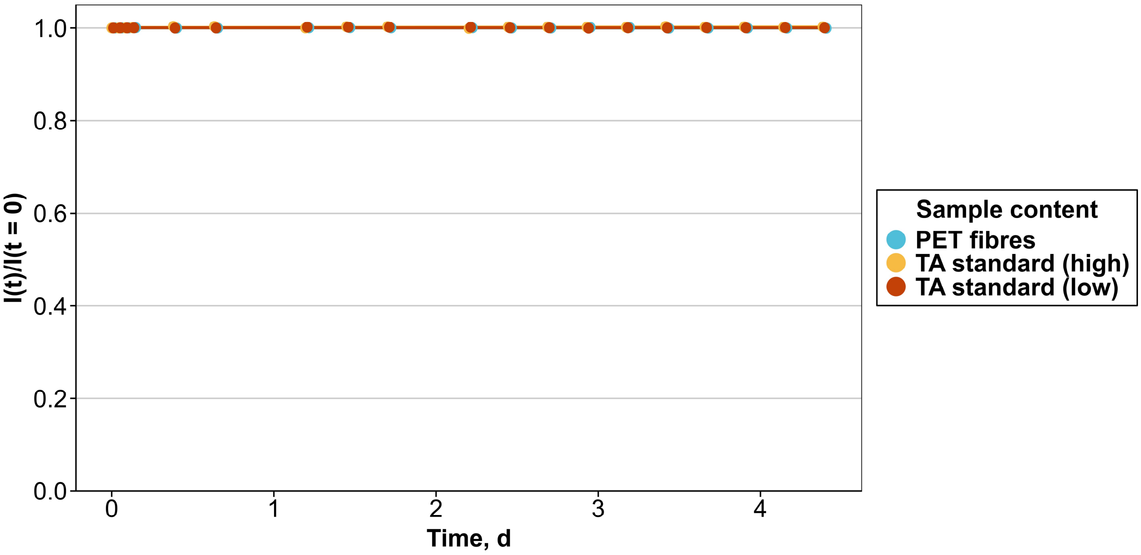

Figure S2. Normalised signal intensity for solutions of terephthalic acid (TA) either from a standard dilution, or the depolymerisation of poly(ethylene terephthalate) (PET) fibres. Each sample initially contained approximately 30 mg (PET fibres; TA standard, high) or 15 mg (TA standard, low) of material. The fibre sample was processed and diluted following the same steps described in the manuscript. TA was dissolved directly in the same solvent volume used for the depolymerisation of fibre samples, then diluted analogously. Samples were maintained at 15°C in the dark in the autosampler of the HPLC instrument and injected repeatedly. The intensity of each time series (peak area over time) is normalised to its corresponding initial value (min ratio = 0.999, max ratio = 1.003).

S3: R PACKAGES USED FOR DATA ANALYSIS

Table S1. R packages used for data analysis. Information was retrieved on the 16th of March 2026.

Name	Version	Released	Maintainer	Email
baseline	1.3.7	Jun 2025	Kristian Hovde Liland	kristian.liland@nmbu.no
boot	1.3.32	Aug 2025	Alessandra R. Brazzale	brazzale@stat.unipd.it
bootstrap	2019.6	Jun 2019	Scott Kostyshak	scott.kostyshak@gmail.com
broom	1.0.12	Jan 2026	Emil Hvitfeldt	emil.hvitfeldt@posit.co
car	3.1.5	Jan 2026	Brad Price	brad.price@mail.wvu.edu
chemCal	0.2.3	Mar 2022	Johannes Ranke	johannes.ranke@jrwb.de
chemometrics	1.4.4	Aug 2023	Peter Filzmoser	Peter.Filzmoser@tuwien.ac.at
data.table	1.18.2.1	Jan 2026	Tyson Barrett	t.barrett88@gmail.com
DescTools	0.99.60	Mar 2025	Andri Signorell	andri@signorell.net
effectsize	1.0.1	May 2025	Mattan S. Ben-Shachar	mattansb@msbstats.info
egg	0.4.5	Jul 2019	Baptiste Auguie	baptiste.auguie@gmail.com
fs	1.6.7	Mar 2026	Jeroen Ooms	jeroenooms@gmail.com
furrr	0.3.1	Aug 2022	Davis Vaughan	davis@rstudio.com
future.apply	1.20.2	Feb 2026	Henrik Bengtsson	henrikb@braju.com
ggflowchart	1.0.0	May 2023	Nicola Rennie	nrennie35@gmail.com
ggh4x	0.3.1	May 2025	Teun van den Brand	tahvdbrand@gmail.com
ggpubr	0.6.3	Feb 2026	Alboukadel Kassambara	alboukadel.kassambara@gmail.com
gridExtra	2.3	Sep 2017	Baptiste Auguie	baptiste.auguie@gmail.com
gt	1.3.0	Jan 2026	Richard Iannone	rich@posit.co
Hmisc	5.2.5	Jan 2026	Frank E Harrell Jr	fh@fharrell.com
lemon	0.5.2	Sep 2025	Stefan M. Edwards	sme@iysik.com
magick	2.9.1	Feb 2026	Jeroen Ooms	jeroenooms@gmail.com
magrittr	2.0.4	Sep 2025	Lionel Henry	lionel@posit.co
MASS	7.3.65	Feb 2025	Brian Ripley	Brian.Ripley@R-project.org
mgcv	1.9.4	Nov 2025	Simon Wood	simon.wood@r-project.org
miceadds	3.18.36	Sep 2025	Alexander Robitzsch	robitzsch@ipn.uni-kiel.de
multcomp	1.4.30	Mar 2026	Torsten Hothorn	Torsten.Hothorn@R-project.org
patchwork	1.3.2	Aug 2025	Thomas Lin Pedersen	thomasp85@gmail.com
plyr	1.8.9	Oct 2023	Hadley Wickham	hadley@rstudio.com
pracma	2.4.6	Oct 2025	Hans W. Borchers	hwborchers@googlemail.com
predictmeans	1.1.1	Nov 2024	Dongwen Luo	dongwen.luo@agresearch.co.nz
quantmod	0.4.28	Jun 2025	Joshua M. Ulrich	josh.m.ulrich@gmail.com
reghelper	1.1.2	Sep 2023	Jeffrey Hughes	jeff.hughes@gmail.com
reshape2	1.4.5	Nov 2025	Hadley Wickham	hadley@posit.co
see	0.13.0	Jan 2026	Daniel Lüdecke	officialeasystats@gmail.com
SimplyAgree	0.3.0	Jan 2026	Aaron Caldwell	arcaldwell49@gmail.com
statip	0.2.3	Nov 2019	Paul Poncet	paulponcet@yahoo.fr
tidyverse	2.0.0	Feb 2023	Hadley Wickham	hadley@rstudio.com

S4: SAMPLE CHROMATOGRAMS OF DIFFERENT FIBRES

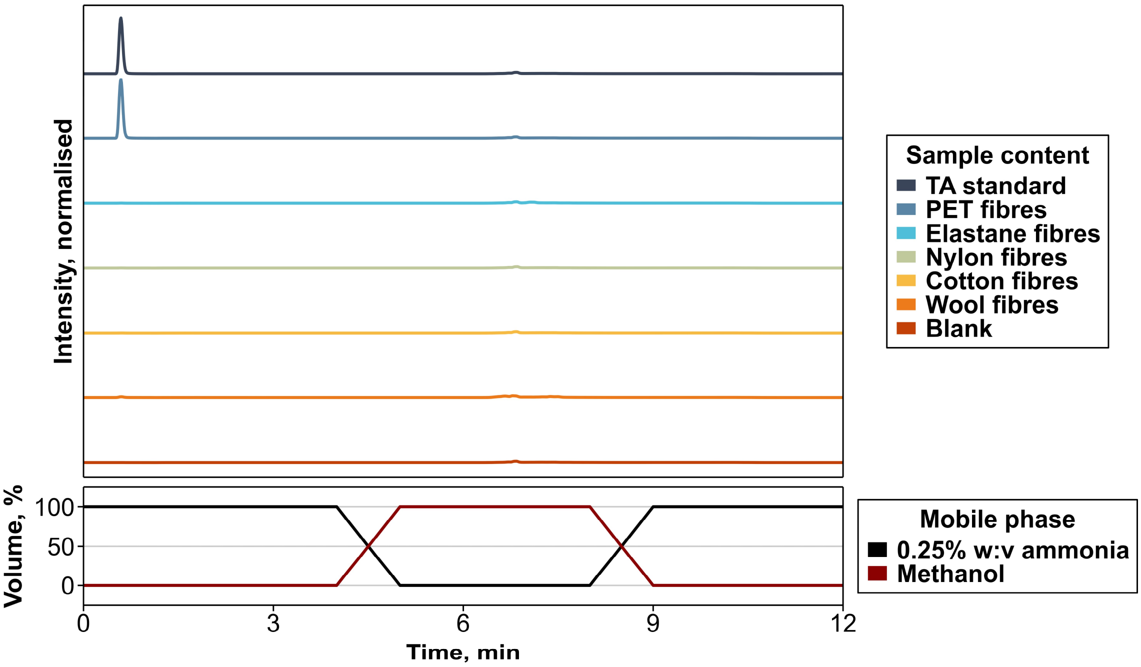

Figure S3. Top: chromatograms of samples containing either a standard solution of terephthalic acid (TA), or the depolymerisation products of poly(ethylene terephthalate) (PET), elastane, nylon, cotton, or wool fibres, and a blank reference (0.125 M KOH, 10% methanol by volume, 10% deionised water, and 80% of 0.25% w:v ammonia, matching the solvent matrix after resolubilisation and dilution of the samples). Each sample initially contained approximately 30 mg of material. All fibre samples were processed and diluted following the same steps described in the manuscript. TA was dissolved directly in the same solvent volume used for the depolymerisation of fibre samples, then diluted analogously. Signal intensity (absorbance at 245 nm) was normalised to the peak height of the PET sample. **Bottom:** mobile phase settings during the measurement.