

Appendix IX: Temperature Time Profiles

When operating a Pyrola pyroprobe, the temperature time profile (TTP) is presented by the software immediately after pyrolysis, enabling an evaluation of the sample heating. This was a feature, which was frequently used to evaluate the pyrolytic analyses performed. E.g. The sample size and/or amount of derivatising agent added could be evaluated based on how much the TTPs of samples deviated from each other, or the necessity of a filament adjustment/replacement could be evaluated based on changes in TTPs of empty filament (blank) analyses over time (blank runs in Fig. AIX-1 and a filament which needed to be adjusted or replaced, then recalibrated in Fig. AIX-2). TTPs of sample runs (examples given in AIX-3-5) visualised how the sample material effected its heating (e.g. how long was it actually heated at the programmed temperature?).

An example of how the TTPs were used in the method development: Amount of TMAH added was reduced, as the TTPs of samples where TMAH was added often deviated much from the ideal TTP.

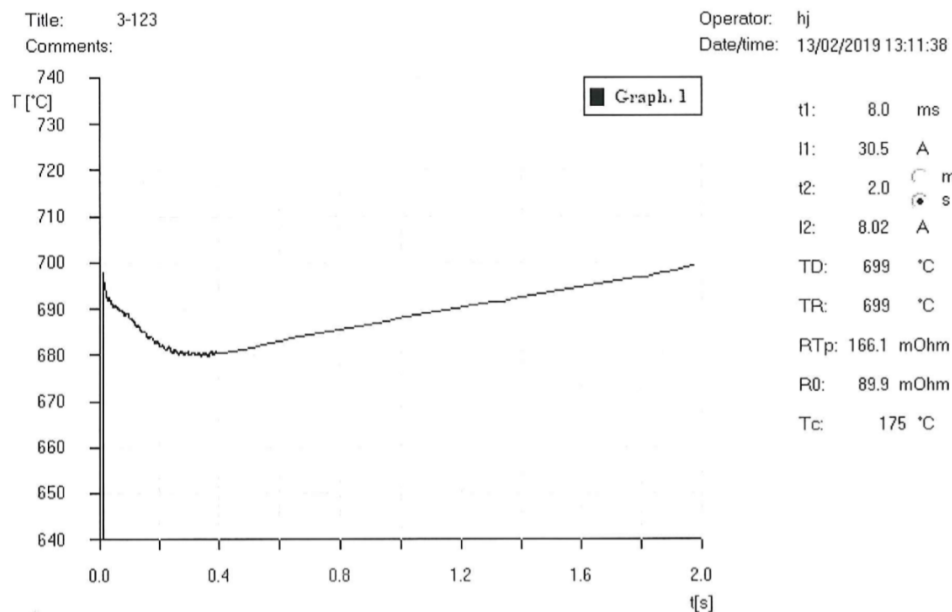


Figure AIX-1: Empty filament, pyrolysed at 700. The filament was newly calibrated, and the temperature time profile (TTP) depicted is (more or less) the ideal TTP.

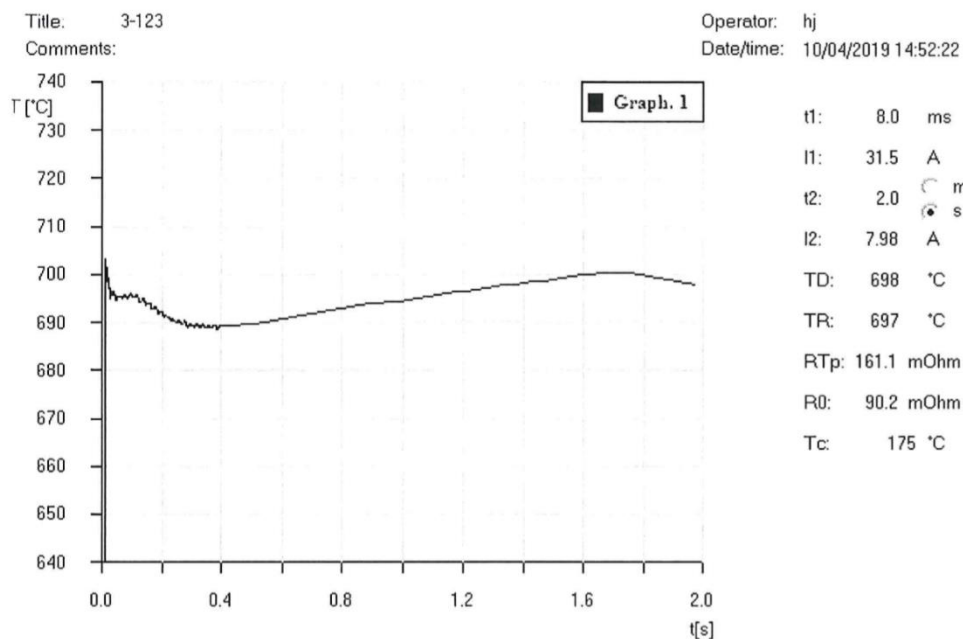


Figure AIX-2: Empty filament (blank run), non-ideal shape of TTP, indicating a need for filament adjustment or replacement.

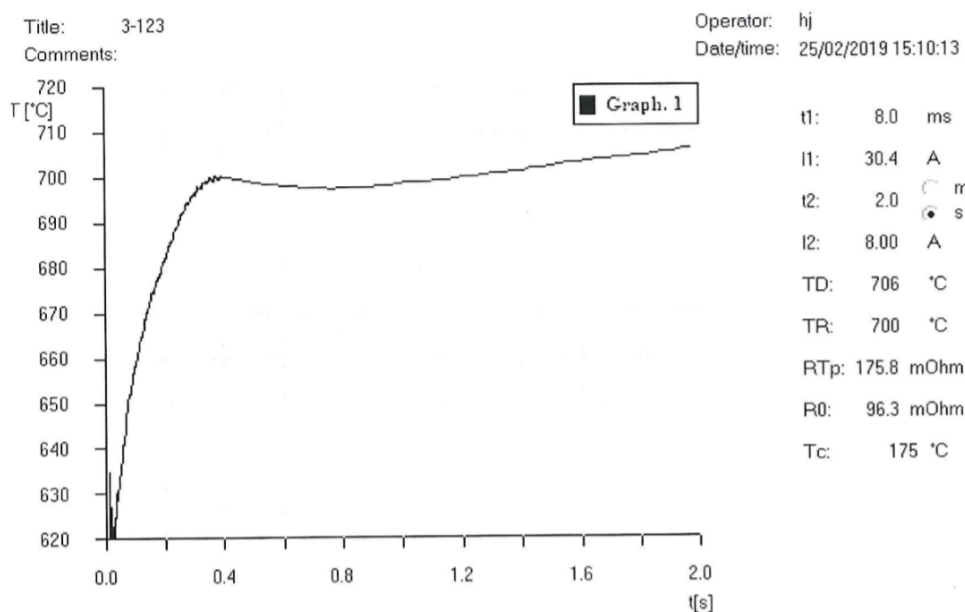


Figure AIX-3: smaller fragment from Mota Giyorgis (0.5-1 mm²) + TMAH (1µL)

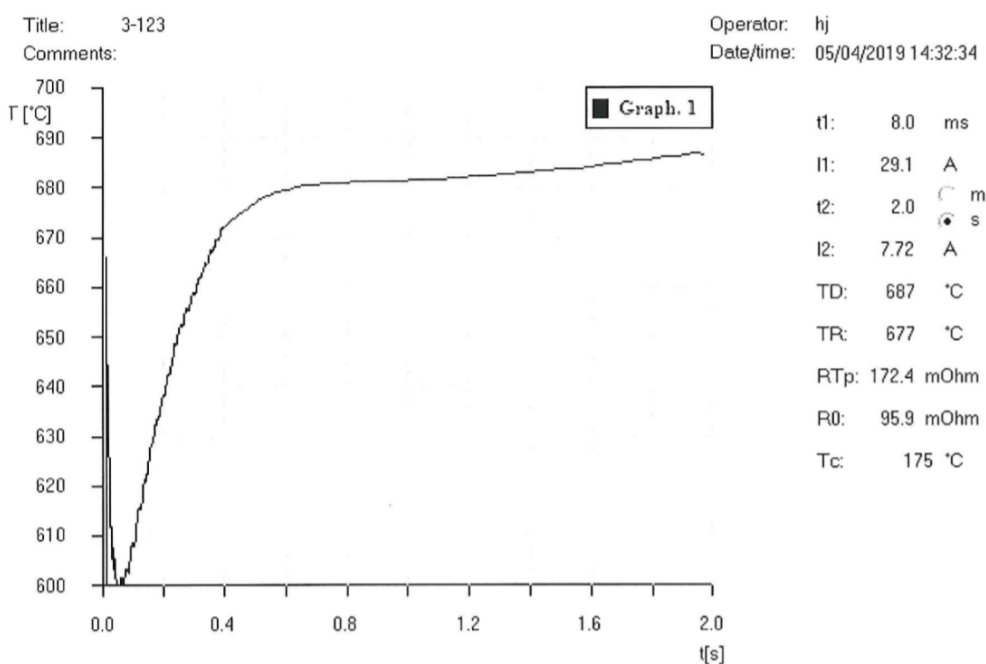


Figure AIX-4: Linseed oil + chalk, non-derivatised (2mm²)

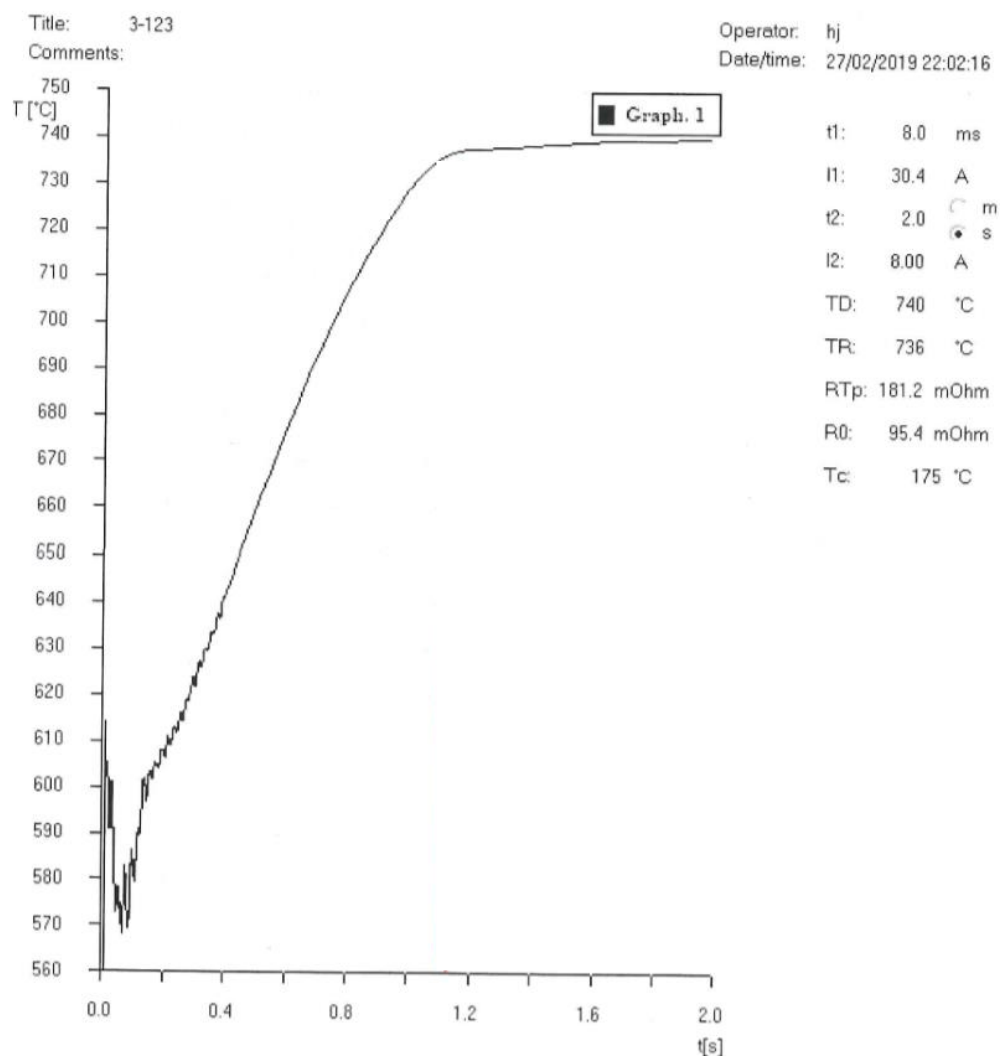


Figure AIX-5: Fragment from the yellow sample from Wukero Cherkos (1mm^2) pyrolysed in presence of TMAH ($1\text{ }\mu\text{L}$). Thick fragment with much grounding layer/support + TMAH: at least 1 sec before filament reached highest temp, then heated 40 degrees above 700.