DMA - TA Q800

Warning: This instrument may only be operated by those who have been trained by AAF staff and have read and signed the AAF laboratory policies.

1) DSC/DMA Computer: Computer should be left on (Password: dscaaf)

1.1) Program: TA Q Series Q800 / (Bottom icon Program Open in TA Instrument Explorer) Click (if icon/explorer program not open on bottom ask S Hardcastle)

i) In middle panel – Three tabs (Summary, Procedure, Notes)

ii) **Start in Summary** – Sample information, fill in as needed

MODE DMA Multi-Frequency Stain (constant Δl/l); Multi-Frequency Stress (constant force); Creep; Stress Relaxation

Each mode has its own custom settings

b) Clamp/Sample needs to loaded and calibrate correct clamp (see 1.2c)

c) Sample shape and dimensions need to be measured and entered (l,w,t).

d) Data file C:\TA\Data\DMA\your folder\your filename

e)Example

DMA Mode Creep : Test : Creep, custom Creep TTS (time_temp superposition)

Test:Creep - Constant Force (temperature) and measure creep for time t_a and measure recovery t_b. (in Procedure tab)

A pre-load force is needed (.01N or 0.1N ??)

Next Procedure

f) Test Creep fill in preload (.01N??), Stress (xxMPa – need to know sample), Isothermal Temp (-120C to 600C), Soak Time, Recovery Time

Advanced: method start auto zero displacement (after isothermal)

Post: Return to temperature T (23C??) at end of run. Open furnace (no?)

iii) Notes tab Name

A Poisson Ratio if known.

B operator User

C Air bearing Air

1.2) Load Sample

a) Open Furnace (Control Tab {top left} – Furnace open)

b) Check clamp replace with correct clamp (each clamp has calibration procedure)

3 point bend (20mm)

Single or dual cantilever (20 or 40mm, needs to be measured more accurately)

Tension (can be used with "floppy" samples or fibers)

c) Calibrate clamp if needed (user must be trained) {On Bookmark Toolbar – clamp procedure you tube videos found}
d) Place sample in clamp (must have correct dimensions)
Ideally thickness is one tenth width. Thickness < 1-2mm
Enter dimensions (cantilever length needs to be measured).
e) Close furnace

1.3) Start Data Run

a) Check Sample Information is correct
b) In TA Q Series Program window left click Apply button {bottom center tab}
c) Green Arrow (top left) is now active. {In left standard sequence table – only one run, see sequence number – red arrow, yellow dot – Run 1 (if dot is red check mark, double click check mark to "change" to yellow dot)}
d) Left click Green (start) Arrow to start data run ("man" walking should be seen below arrow)
e) A hissing sound will be heard throughout experiment (normal)

1.4) Obverse/Analyze Data

a) The second farthest right ICON in TA Instruments is WinUA(Universal Analysis) Left Click (It may already be open, check open programs icons)
b) Open Data File (same folder above…)
   i) Data file information appears
   ii) Signals
      a) Y axis can display up to 4 signals (Creep use displacement can view force, stress)
      b) X axis can display Time
   ii) If Data is being collected, make sure Auto Refresh Data is checked in Graph Tab of UA program.

1.5) Save Sample File

1.6.1) Data is automatically saved ***.001 file
1.6.2) In UA File Save data as Text or Spreadsheet Type
a) Highlight data file graph to be saved: Click File tab - Export – File Plot Signals – Choose ASII (Text) or Spreadsheet file - Finish – Edit file name and folder (If needed) - SAVE

1.6) Remove Sample end of experiment run

1) Allow Sample/Furnace to Remove "caps"
2) Open Furnace
3) Remove sample from clamp
4) Leave clamp in position

1.7) Clean up DMA area

1.8) Sign in usage in DMA Log book