TA Instruments Q20 Differential Scanning Calorimeter (GERB 143)

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Turn on the RCS (chiller) before beginning your experiment:

1. In TA Instrument Explorer window, double-click Q20 icon

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For Help, press F1			🛛 🗄 🔲 🎵



In QSeries window:
 Control → Event → On to turn on RCS (chiller)

Flange temperature needs to cool to < -70 °C before running experiment



Prepare your sample

- 1. Samples should be dry; heat it overnight in a drying oven to vaporize any water/solvent
- 2. Perform a TGA measurement if necessary to make sure you do not heat the sample to decomposition in the DSC (this will damage the DSC sensors)
- 3. Place the sample in the pan and take the mass
 - 5-10 mg polymers
 - 10-15 mg crosslinked thermosets
 - 3-5 mg metals or chemical melting
- 4. Place lid onto your pan and crimp lid down if necessary (MCF does not have a crimper)

Load your sample into the DSC

- 1. Remove outer lid and place onto metal tray
- 2. Carefully remove first inner lid with tweezers and place onto metal tray
- Carefully remove second inner lid with tweezers and place onto metal tray
 Do not touch inner lids with bare hands! Use tweezers!



OUTER LID



FIRST INNER LID



SECOND INNER LID

- 4. Carefully place empty reference pan with lid on rear left platform using tweezers
- 5. Carefully place sample pan with lid on front right platform using tweezers
- 6. Replace all three lids



Set up your experiment

- 1. Click on "Experiment" on the left toolbar to display the last Experiment Sequence
- 2. In the Summary tab, choose "Standard" mode and select desired test format *If the window doesn't look like this, click the "Experiment View" icon on the top toolbar*

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3. Input Sample Name, Pan Type, Sample Size, any comments, and choose a location to save your data.

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4. In the Procedure tab, input the temperature and heating rate parameters that are appropriate for your run. *Do not exceed 400 C.*

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5. In the "Notes" tab, ensure that nitrogen is selected as the purge gas and the flow rate is set to 50 mL/min

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- 6. Click "Apply" button to update the Experiment Sequence in the left toolbar.
- 7. Double click your Run or press the green start button to begin your experiment or "Schedule" your experiment

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Analyze your data

- 1. Click "Plot View" or "Full Size Plot View" icon on top toolbar to display the plot window in the center.
- 2. Open your DSC curve
- 3. Use the top toolbar to label transitions, etc.
- 4. Choose File → Export PDF
- 5. Also export the XY coordinates of your plot; File → Export Data File → File and Plot Signals



Shutdown

- 1. After experiment ends, temperature should return to standby (40 °C)
- 2. Turn off RCS: Control \rightarrow Event \rightarrow Off
- 3. Close Q20 software
- 4. DSC remains on