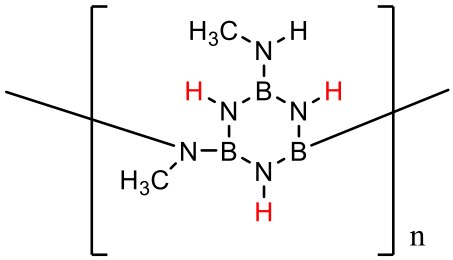
Sample Name:
Borazine-Based Polymer as Fiber Precursor

Poly(tris-B-methylaminoborazine)

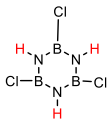
Sample #: **P43611-borazine**

Structure:

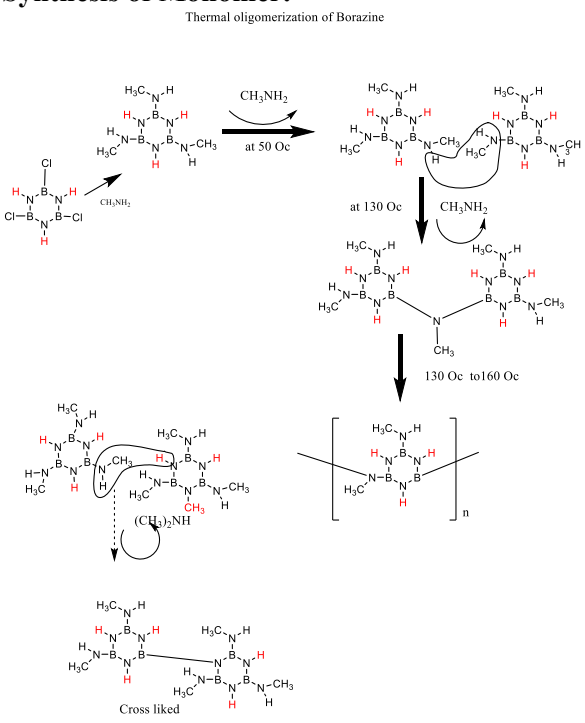


Synthesis Procedure:
Following monomer was used in the process.

2,4,6-TRICHLOROBORAZINE
CAS Number: **933-18-6**



Synthesis of Monomer:



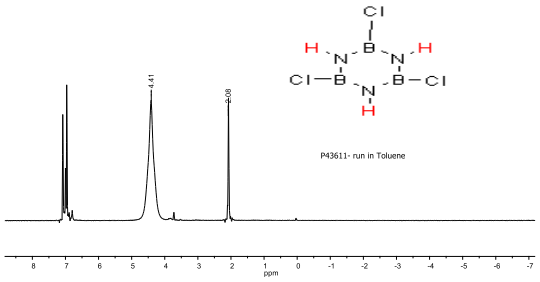
2nd Step:
The removed Solvent after filtration
And the solid viscous mass was given heat treatment as follows:
Under argon flow:
30 minutes at 80 ºC
60 minutes at 130 ºC
16hrs at 160 ºC (overnight)
90 minutes at 170 ºC
To get solid soft mass and that solidified at Room temperature.
DSC analysis of the Product after Heat treatment at 130 ºC for 60 minutes:

DSC analysis of the Product after removing solvents- chlorobenzene-Toluene

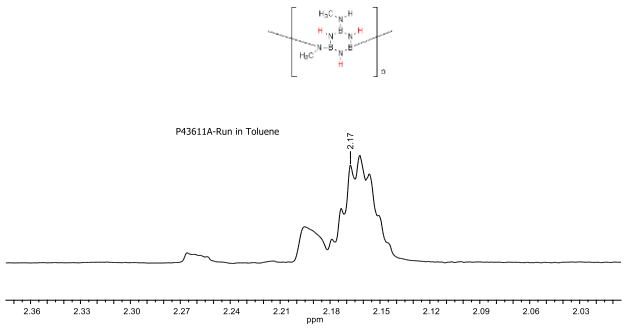
DSC analysis of the product after heat treatment at 160 ºC for 1h:

DSC analysis of the product after heat treatment at 160 ºC for 16h

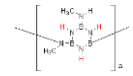
HNMR of Trimer 2,4,6-TRICHLOROBORAZINE:

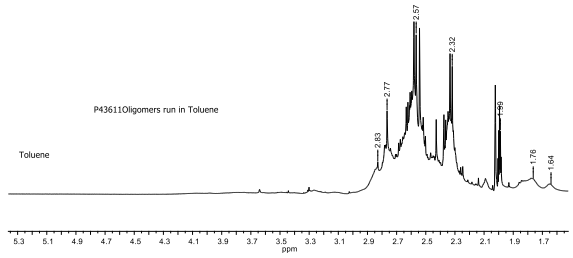


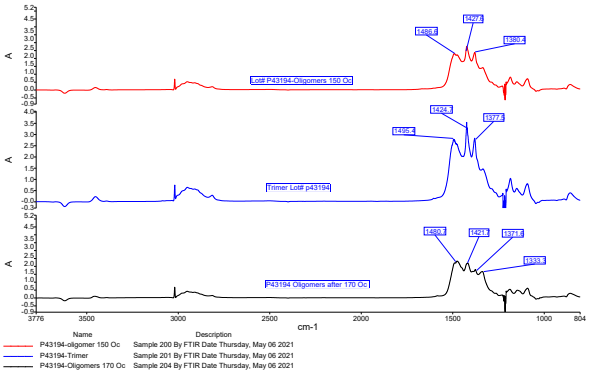
HNMR of Trimer methyl amino Borazine



HNMR of Oligomers after Heat Treatment at 150 °C:

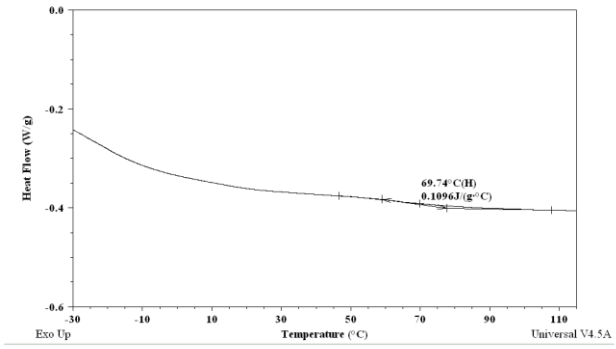


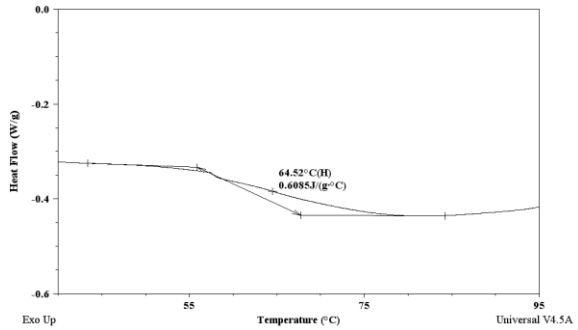




FTIR of the oligomer after heat treatment at 170 °C, there is some changes in the intensity at 1333 cm-1. Rest of the pattern remain the same as of starting oligomers.

DSC of the Oligomers after removing toluene-chrolobenzene volatiles: starting material





Method Log:
1: Equilibrate at -40.00°C
2: Isothermal for 1.00 min
3: Mark end of cycle 1
4: Ramp 10.00°C/min to 100.00°C
5: Isothermal for 1.00 min
6: Mark end of cycle 2

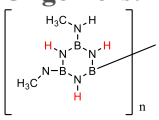
Elemental Analysis: Trimer 2,4,6-TRICHLOROBORAZINE:

Sample: Sample# p43611
Lab ID: 2022-P-1866 **Received:** 2022-01-17

Analysis	Method	Result	Basis	Sample Amount Used	Date (Time)
B : Boron					
	GLI Procedure ME-70	18.2 %	As Received	25.43 mg	2022-01-27
H : Hydrogen					
	GLI Procedure ME-14	1.42 %	As Received	4.015 mg	2022-01-28
N : Nitrogen					
	GLI Procedure ME-14	20.85 %	As Received	3.074 mg	2022-01-31
X3 : Total Halogens as Cl					
	GLI Procedure E17-1	55.43 %	As Received	5.28 mg	2022-01-25

+-Error 3-4%
Chemical Formula: B3Cl3H3N3
Elemental Analysis Theoretical: B, 17.64; Cl, 57.85; H, 1.65; N, 22.86

Trimer methyl amino Borazine or Oligomers:



Sample: Sample# P43611A
Lab ID: 2022-P-1867 **Received:** 2022-01-17

Analysis	Method	Result	Basis	Sample Amount Used	Date (Time)
B : Boron					
	GLI Procedure ME-70	23.3 %	As Received	26.92 mg	2022-01-27
C : Carbon					
	GLI Procedure ME-14	18.28 %	As Received	1.845 mg	2022-01-28
Cl : Chlorine by IC					
	GLI Procedure ME-4A	0.0698 %	As Received	104.87 mg	2022-01-25
H : Hydrogen					
	GLI Procedure ME-14	4.98 %	As Received	1.845 mg	2022-01-28
N : Nitrogen					
	GLI Procedure ME-14	38.61 %	As Received	2.827 mg	2022-01-31

Error: variation 3-4%
Elemental Analysis Theoretical: C, 21.50; H, 9.02; B, 19.35; N, 50.14
Oligomer:
Elemental Analysis: C, 23.77; H, 8.64; B, 21.39; N, 46.20