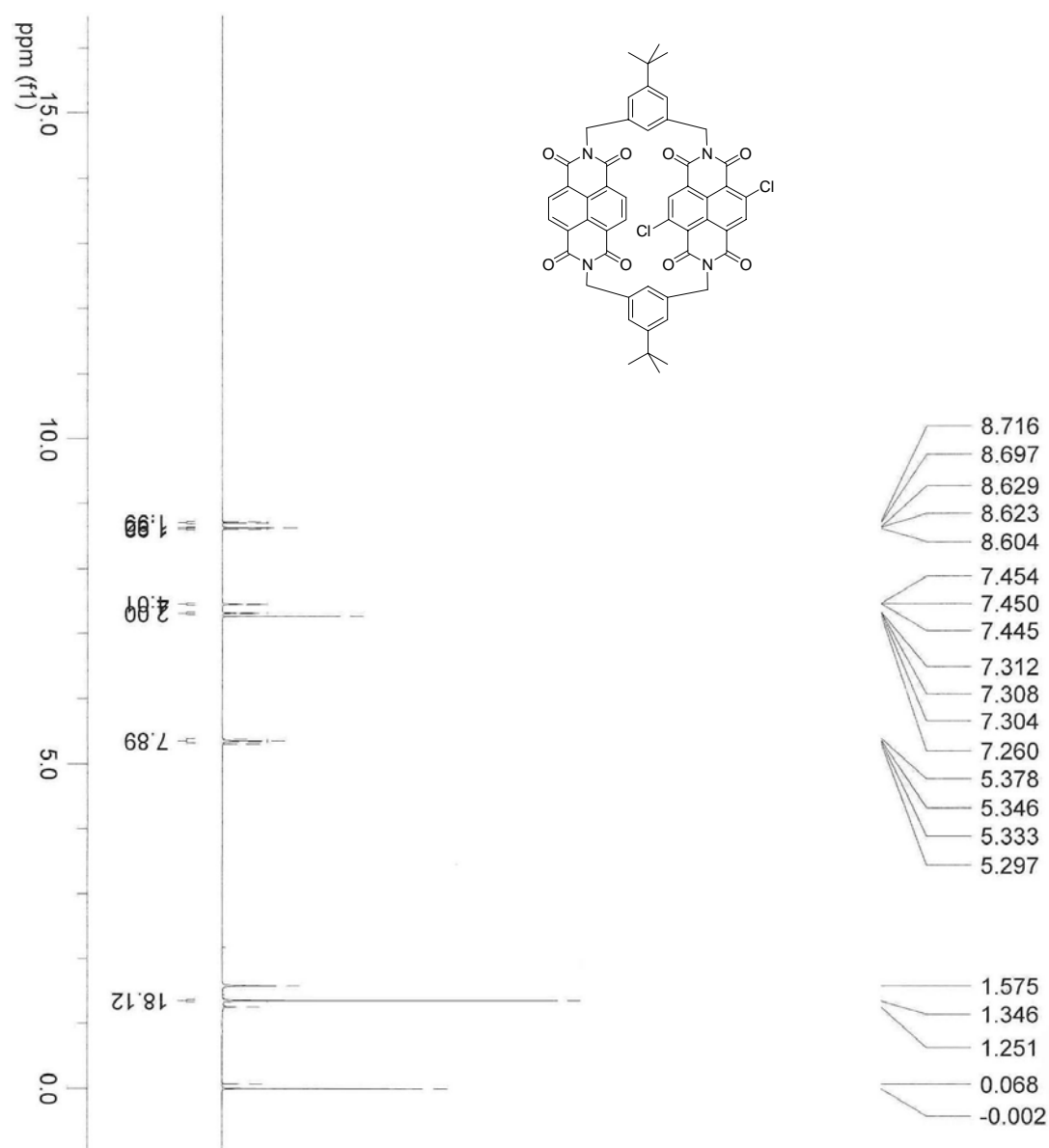


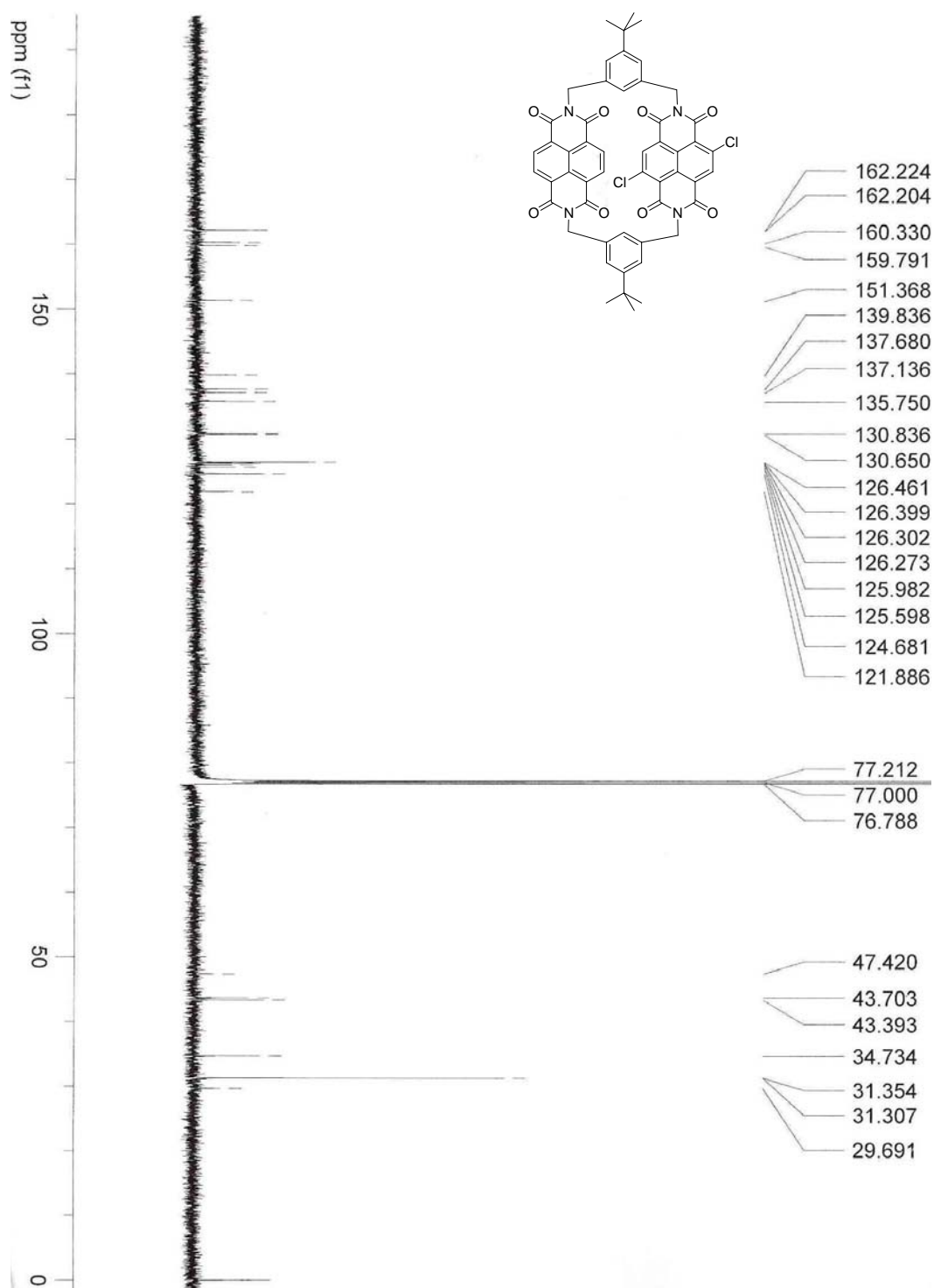
Electronic Supplementary Information (ESI) of the manuscript:**Planar chiral asymmetric naphthalenediimide cyclophanes:
Synthesis, characterization and tunable FRET properties****Sandro Gabutti,^a Silvia Schaffner,^a Markus Neuburger,^a Matthias Fischer,^b Gabriel Schäfer^a
and Marcel Mayor^{*a,b}**^a University of Basel, Department of Chemistry, St. Johannisring 19, CH-4056 Basel, Switzerland, Fax: +41 61 267 1016; Tel: +41 61 267 1006; E-mail: marcel.mayor@unibas.ch^b Forschungszentrum Karlsruhe GmbH, Institute for Nanotechnology, P. O. Box 3640, D-76021 Karlsruhe, Germany.**Table of Contents**

| | |
|--|--------|
| 1. Characterisation of asymmetric Cl₂-NDI cyclophane (1) | |
| ¹ H-NMR, ¹³ C-NMR spectra and HPLC-MS traces | ESI-2 |
| 2. Characterisation of asymmetric (tBuS)₂-NDI cyclophane (2) | |
| ¹ H-NMR, ¹³ C-NMR spectra, chiral HPLC and HPLC-MS traces | ESI-5 |
| 3. Characterisation of asymmetric Cl-MeO-NDI cyclophane | |
| ¹ H-NMR, ¹³ C-NMR spectra and HPLC-MS traces | ESI-9 |
| 4. Characterisation of asymmetric (MeO)₂-NDI cyclophane (3) | |
| ¹ H-NMR, ¹³ C-NMR spectra, chiral HPLC and HPLC-MS traces | ESI-11 |
| 5. Characterisation of asymmetric asymmetric ((CH₂)₅N)₂-NDI cyclophane (4) | |
| ¹ H-NMR, ¹³ C-NMR spectra, chiral HPLC and HPLC-MS traces | ESI-15 |

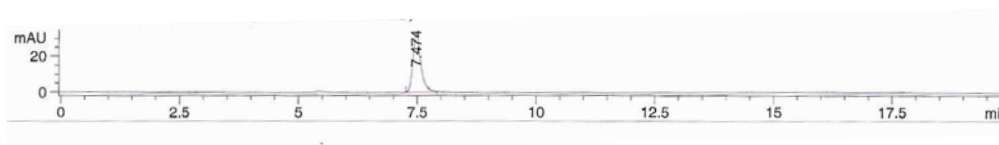
1. Characterisation of asymmetric Cl₂-NDI cyclophane (1)

¹H-NMR spectra

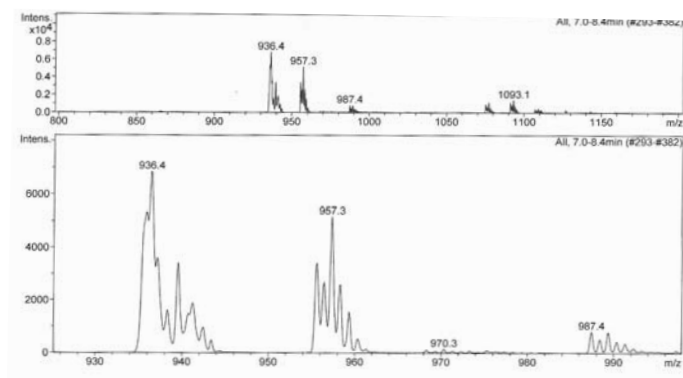
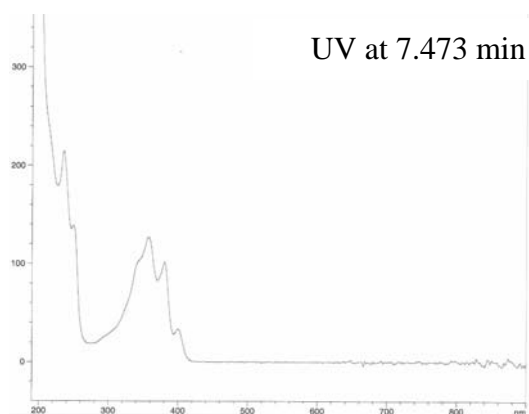


^{13}C -NMR spectra

HPLC-ESI-MS

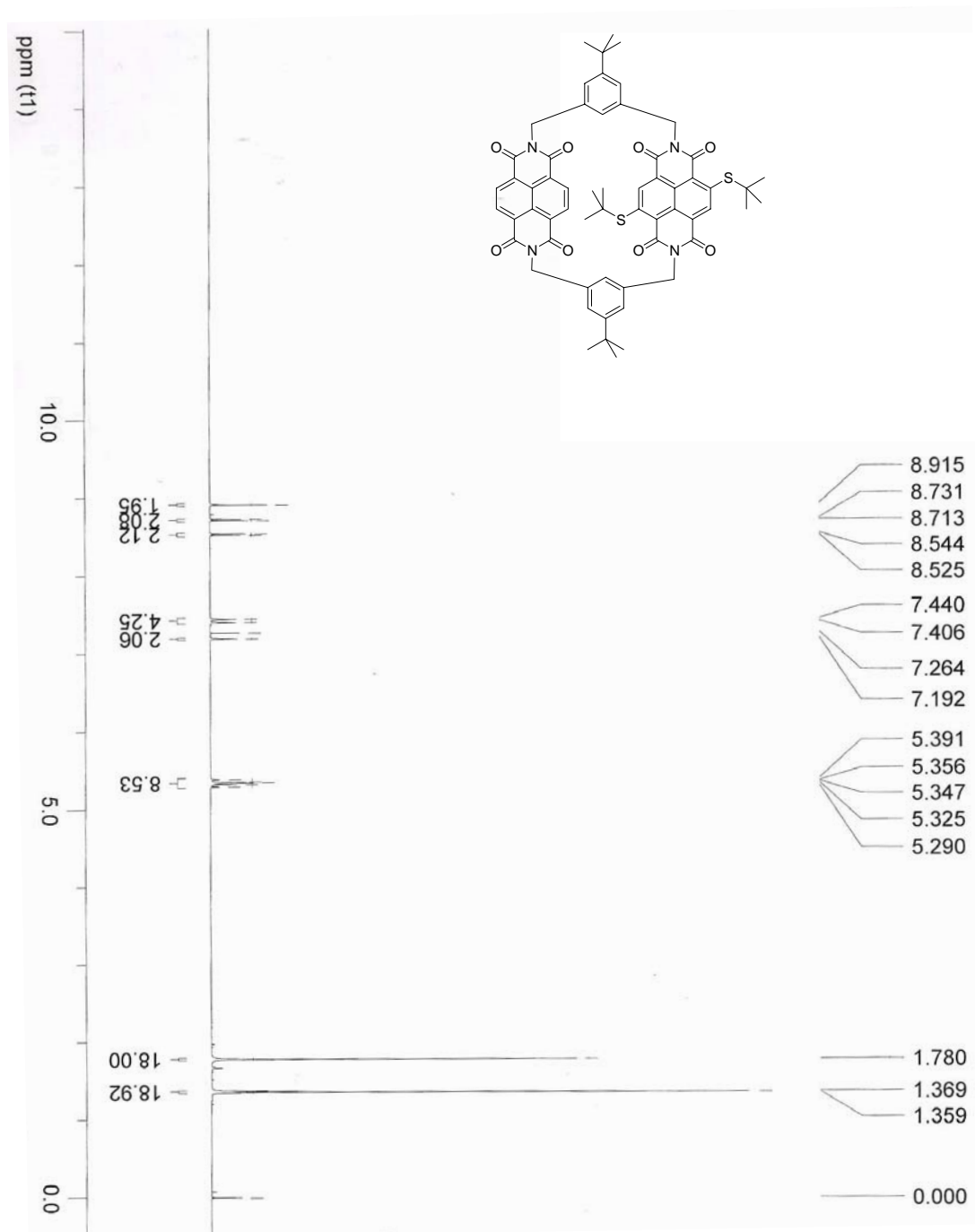


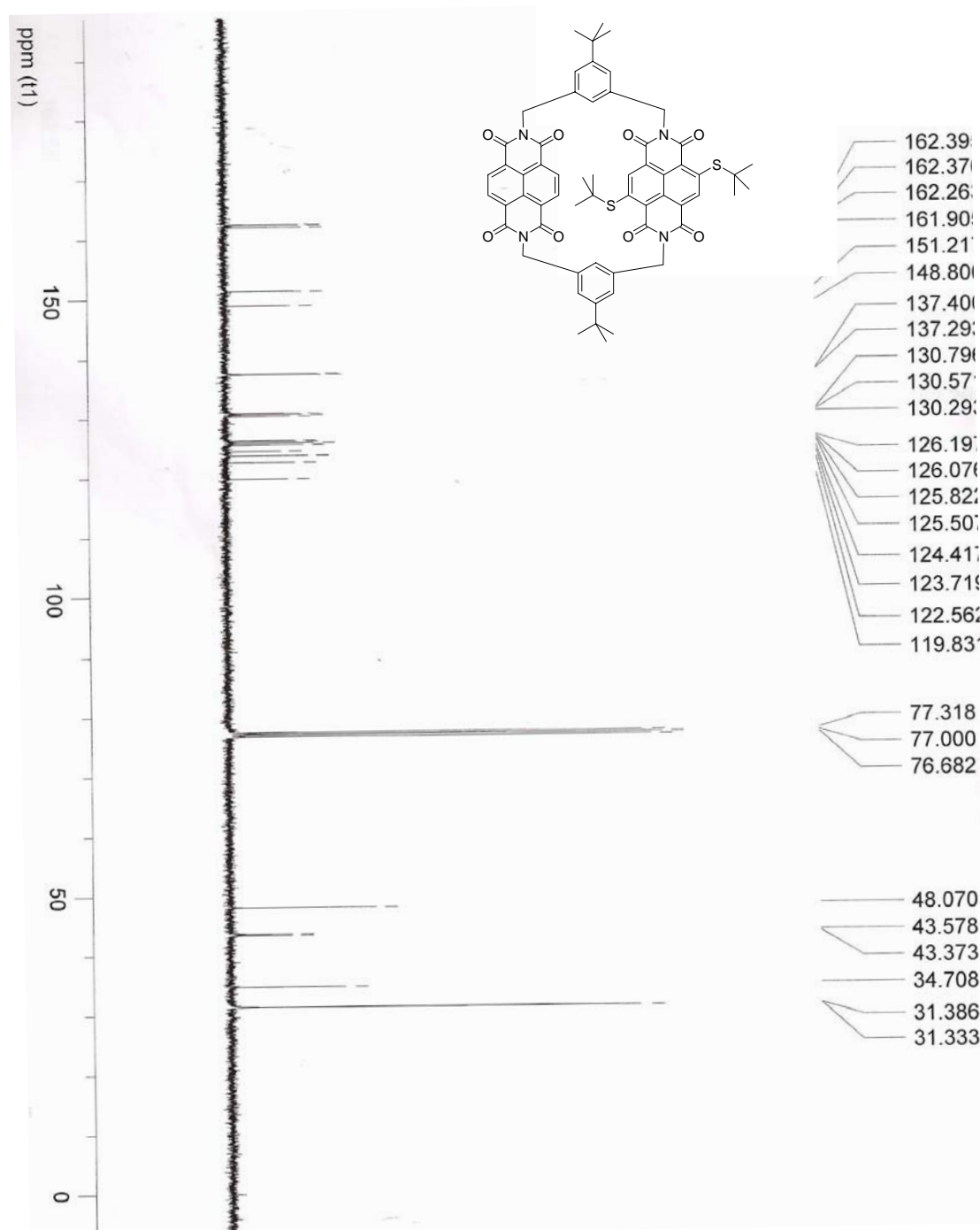
| Peak # | RetTime [min] | Type | Width [min] | Area [mAU*s] | Height [mAU] | Area % |
|----------|---------------|------|-------------|--------------|--------------|---------|
| 1 | 5.425 | BB | 0.1748 | 42.74128 | 3.64438 | 2.7895 |
| 2 | 7.473 | VB | 0.1828 | 1489.47290 | 123.39246 | 97.2105 |
| Totals : | | | | 1532.21418 | 127.03685 | |



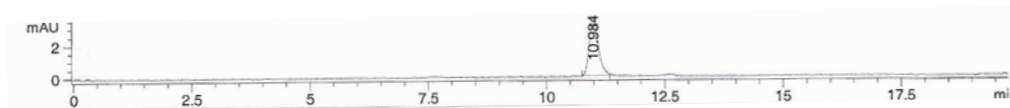
2. Characterisation of asymmetric (^tBuS)₂-NDI cyclophane (2)

¹H-NMR spectra

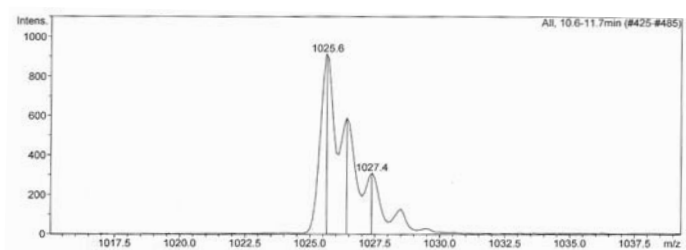
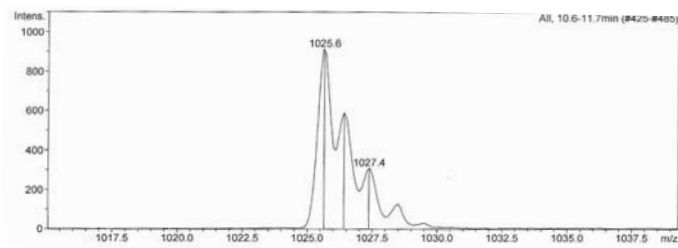
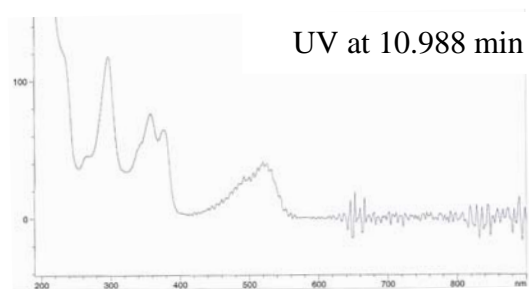


^{13}C -NMR spectra

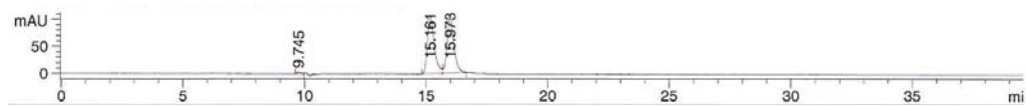
HPLC-ESI-MS



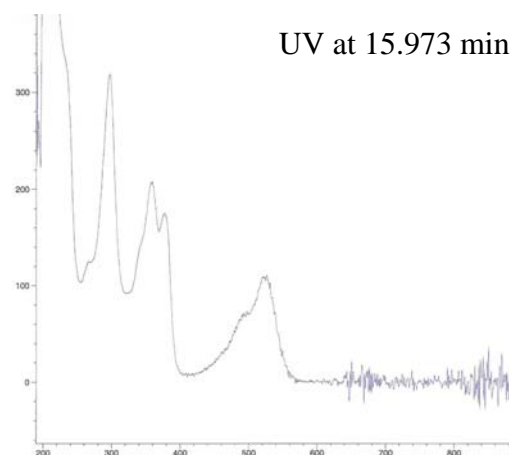
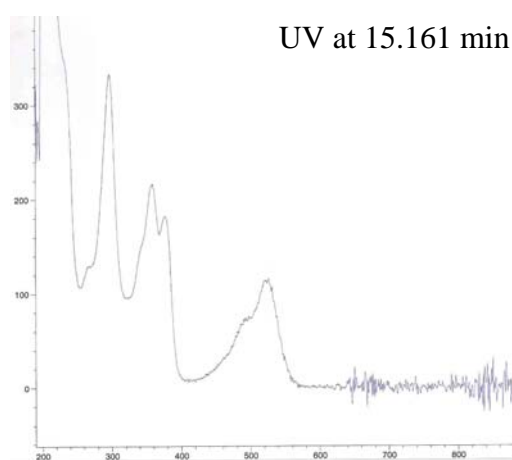
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|----------|---------------|------|-------------|--------------|--------------|---------|
| 1 | 7.609 | BB | 0.2119 | 18.02073 | 1.13119 | 1.7649 |
| 2 | 10.988 | BB | 0.2062 | 1003.02545 | 73.97566 | 98.2351 |
| Totals : | | | | 1021.04618 | 75.10685 | |



Chiral HPLC

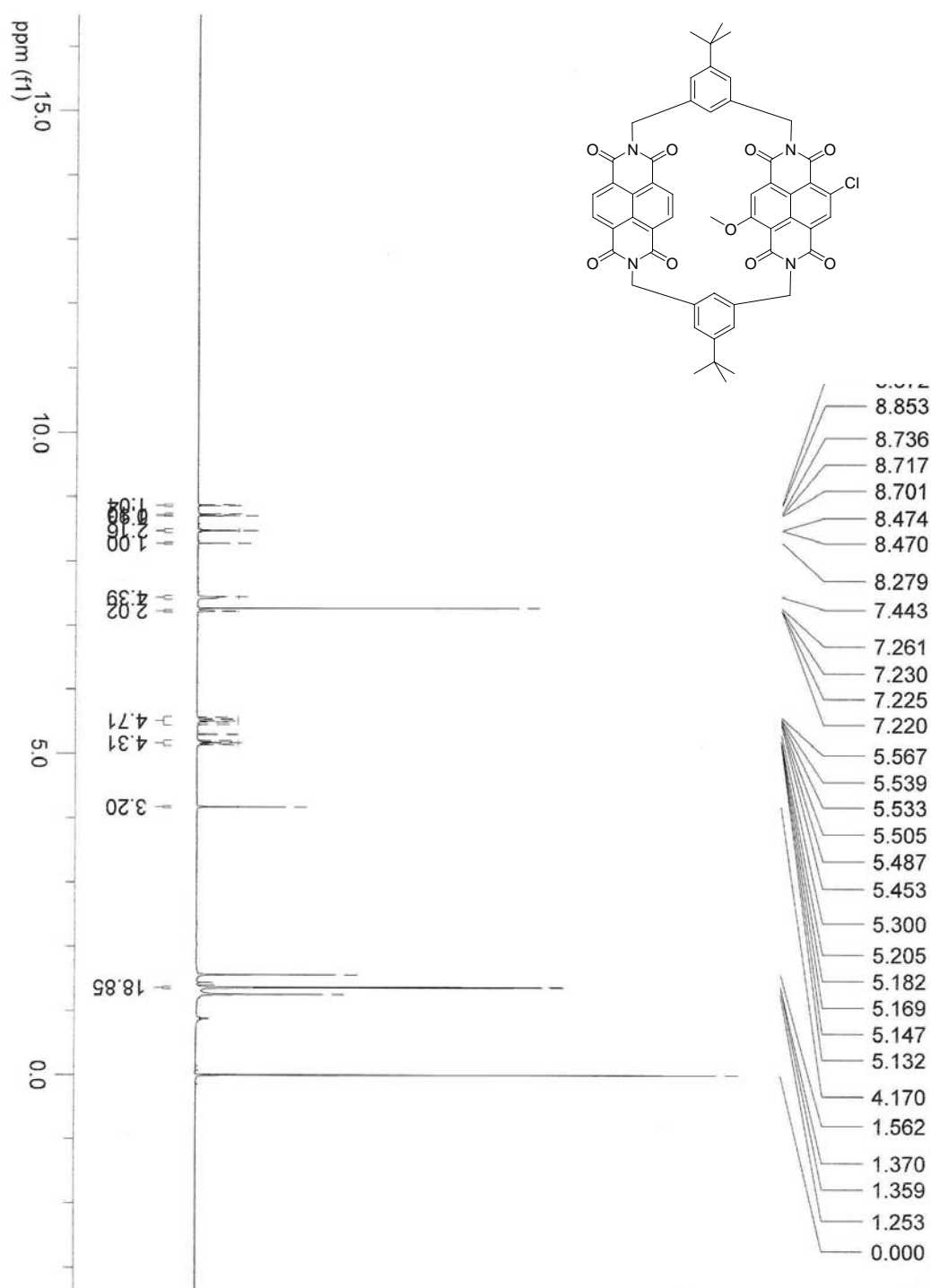


| Peak # | RetTime [min] | Type | Width [min] | Area [mAU*s] | Height [mAU] | Area % |
|--------|---------------|------|-------------|--------------|--------------|---------|
| 1 | 9.745 | BB | 0.1724 | 40.31122 | 3.12643 | 0.9699 |
| 2 | 15.161 | PV | 0.2861 | 2066.74365 | 107.57854 | 49.7270 |
| 3 | 15.973 | VB | 0.3029 | 2049.12524 | 101.76608 | 49.3031 |

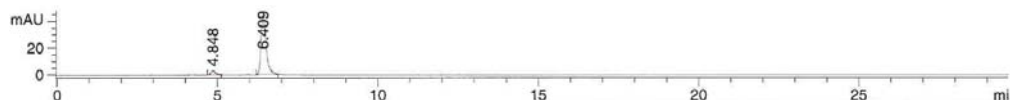


3. Characterisation of asymmetric Cl-MeO-NDI cyclophane

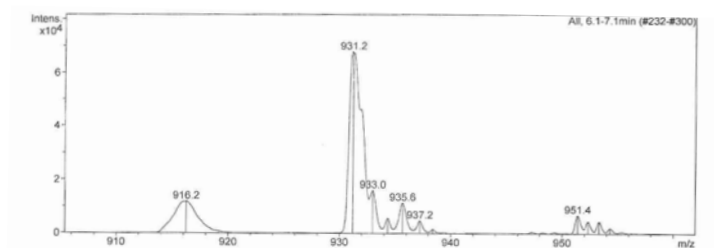
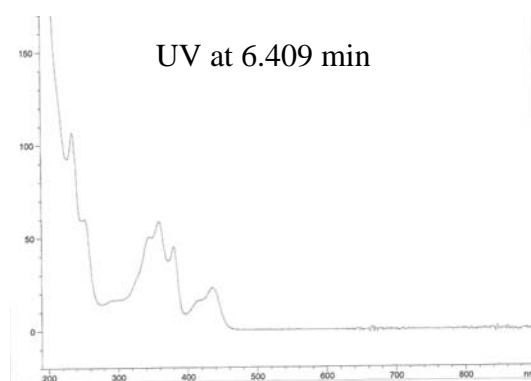
$^1\text{H-NMR}$ spectra



HPLC-ESI-MS

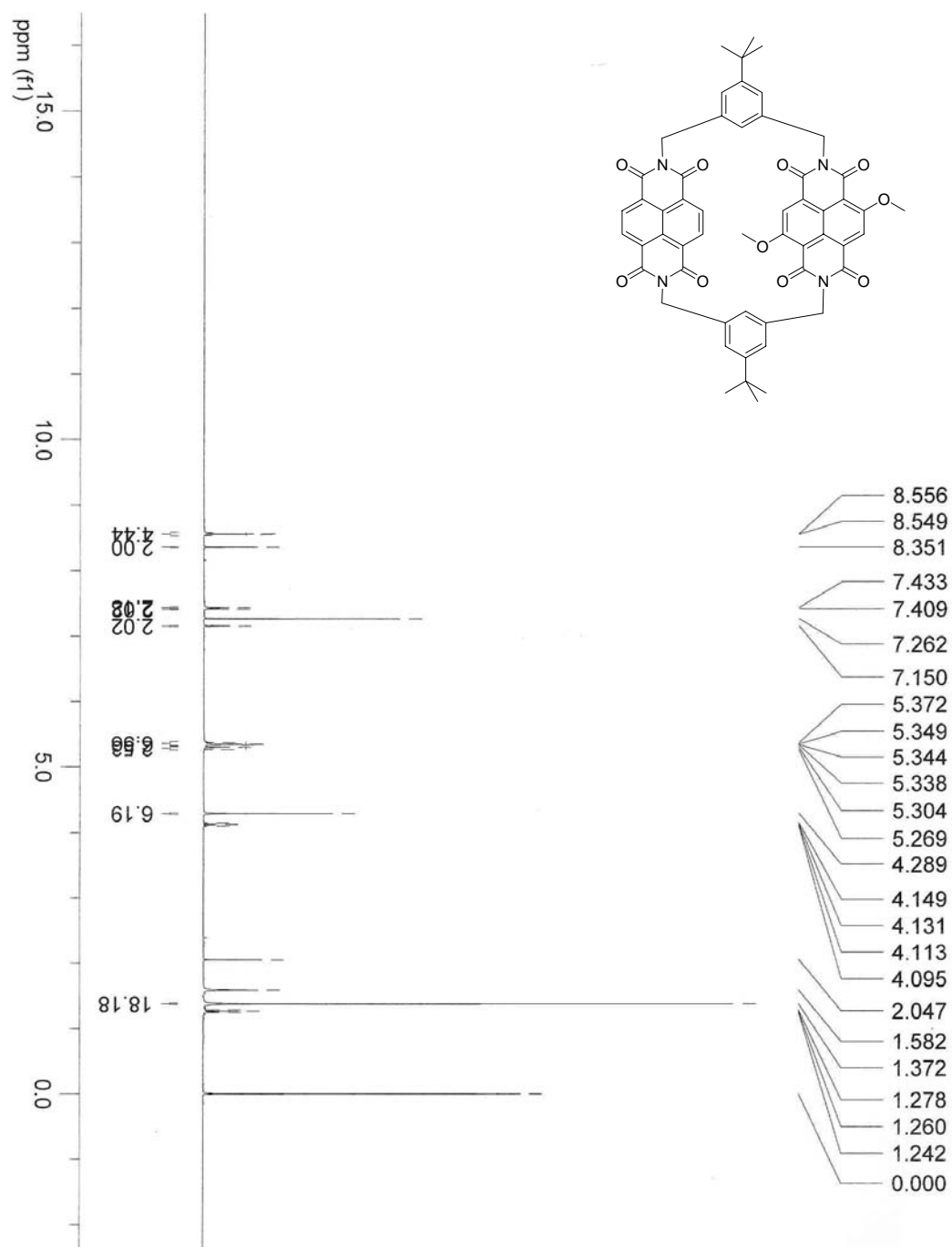


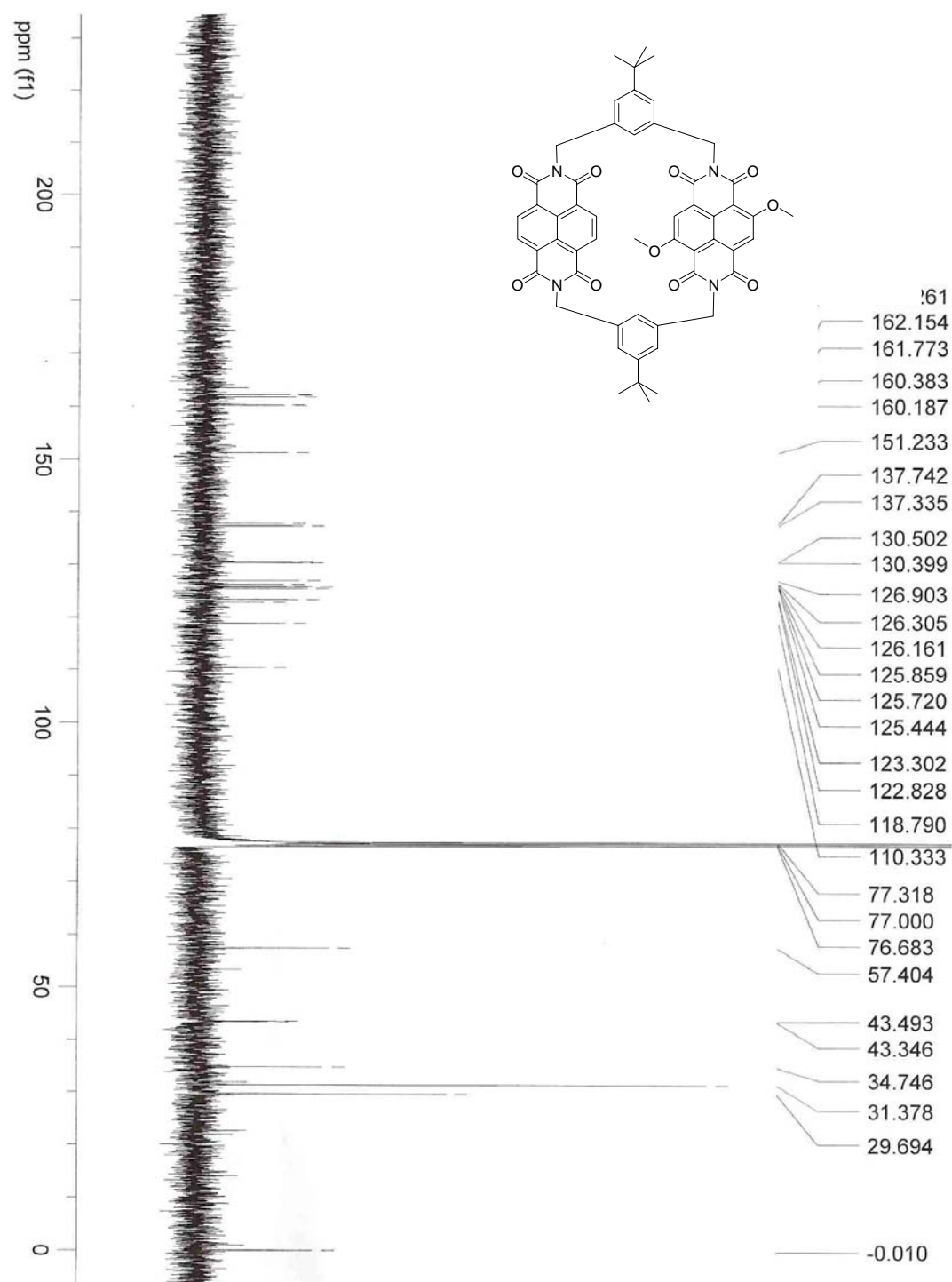
| Peak # | RetTime [min] | Type | Width [min] | Area [mAU*s] | Height [mAU] | Area % |
|----------|---------------|------|-------------|--------------|--------------|---------|
| 1 | 4.848 | PB | 0.1523 | 32.33945 | 3.18963 | 6.0800 |
| 2 | 6.409 | PB | 0.1642 | 499.56085 | 45.44943 | 93.9200 |
| Totals : | | | | 531.90030 | 48.63906 | |



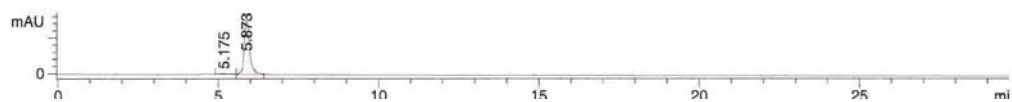
4. Characterisation of asymmetric (MeO)₂-NDI cyclophane (3)

¹H-NMR spectra

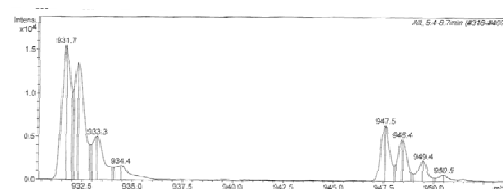
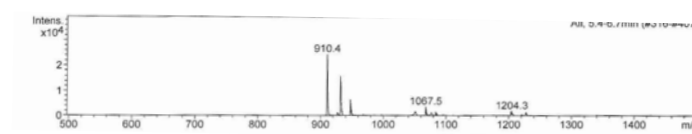
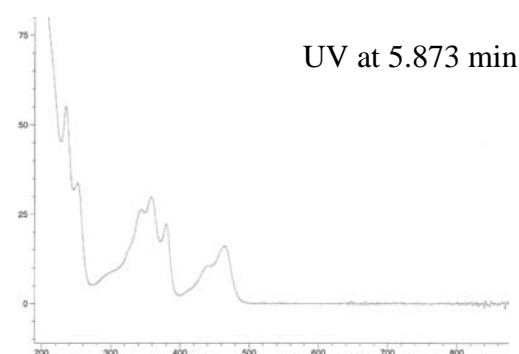


^{13}C -NMR spectra

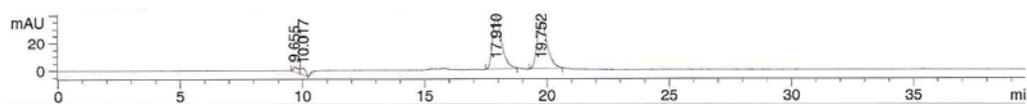
HPLC-ESI-MS



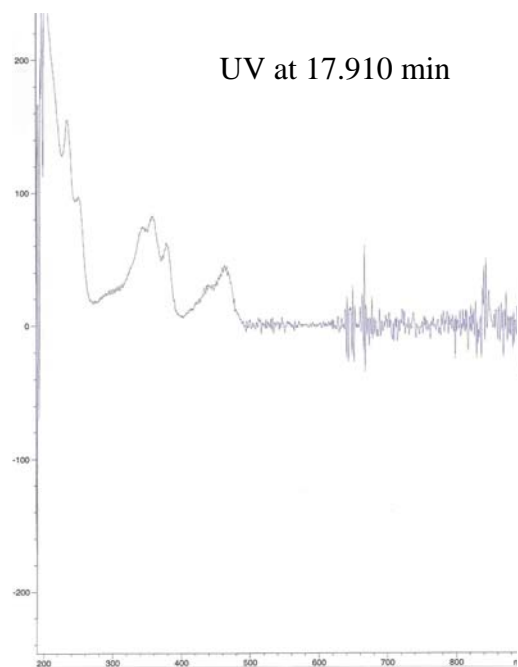
| Peak # | RetTime [min] | Type | Width [min] | Area [mAU*s] | Height [mAU] | Area % |
|----------|---------------|------|-------------|--------------|--------------|---------|
| 1 | 5.175 | BV | 0.2569 | 23.60901 | 1.24671 | 2.5109 |
| 2 | 5.873 | VB | 0.1674 | 916.65375 | 81.37714 | 97.4891 |
| Totals : | | | | 940.26275 | 82.62386 | |



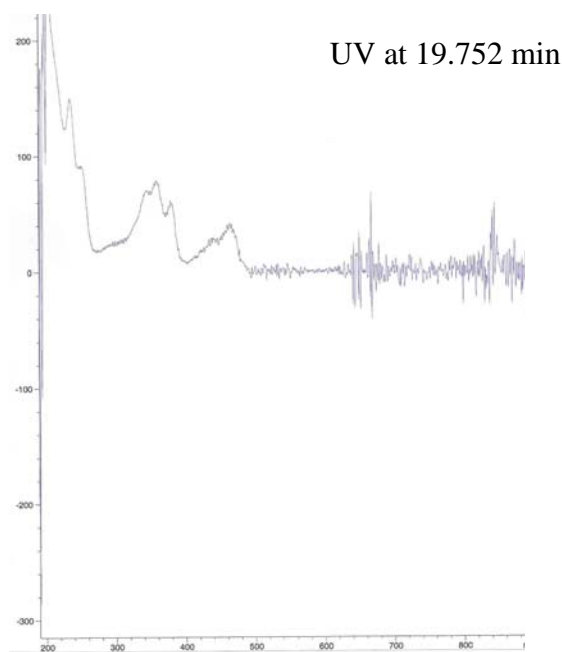
Chiral HPLC



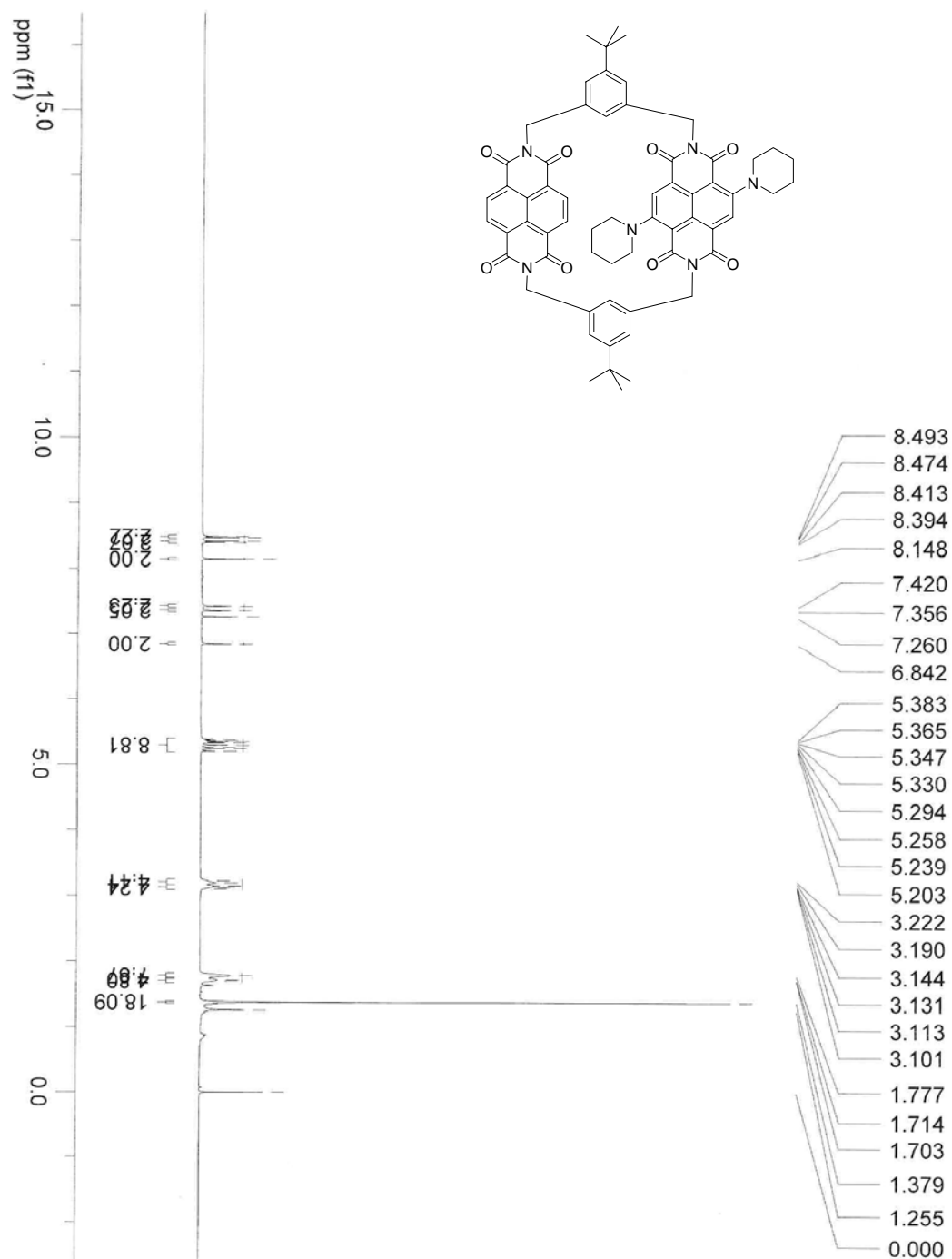
| Peak # | RetTime [min] | Type | Width [min] | Area [mAU*s] | Height [mAU] | Area % |
|----------|---------------|------|-------------|--------------|--------------|---------|
| 1 | 9.655 | BB | 0.1892 | 61.15757 | 4.26846 | 2.9033 |
| 2 | 10.017 | BP | 0.1938 | 59.48710 | 4.63175 | 2.8240 |
| 3 | 17.910 | BB | 0.3897 | 995.01764 | 38.22557 | 47.2353 |
| 4 | 19.752 | BB | 0.4388 | 990.85254 | 34.31944 | 47.0375 |
| Totals : | | | | 2106.51485 | 81.44523 | |

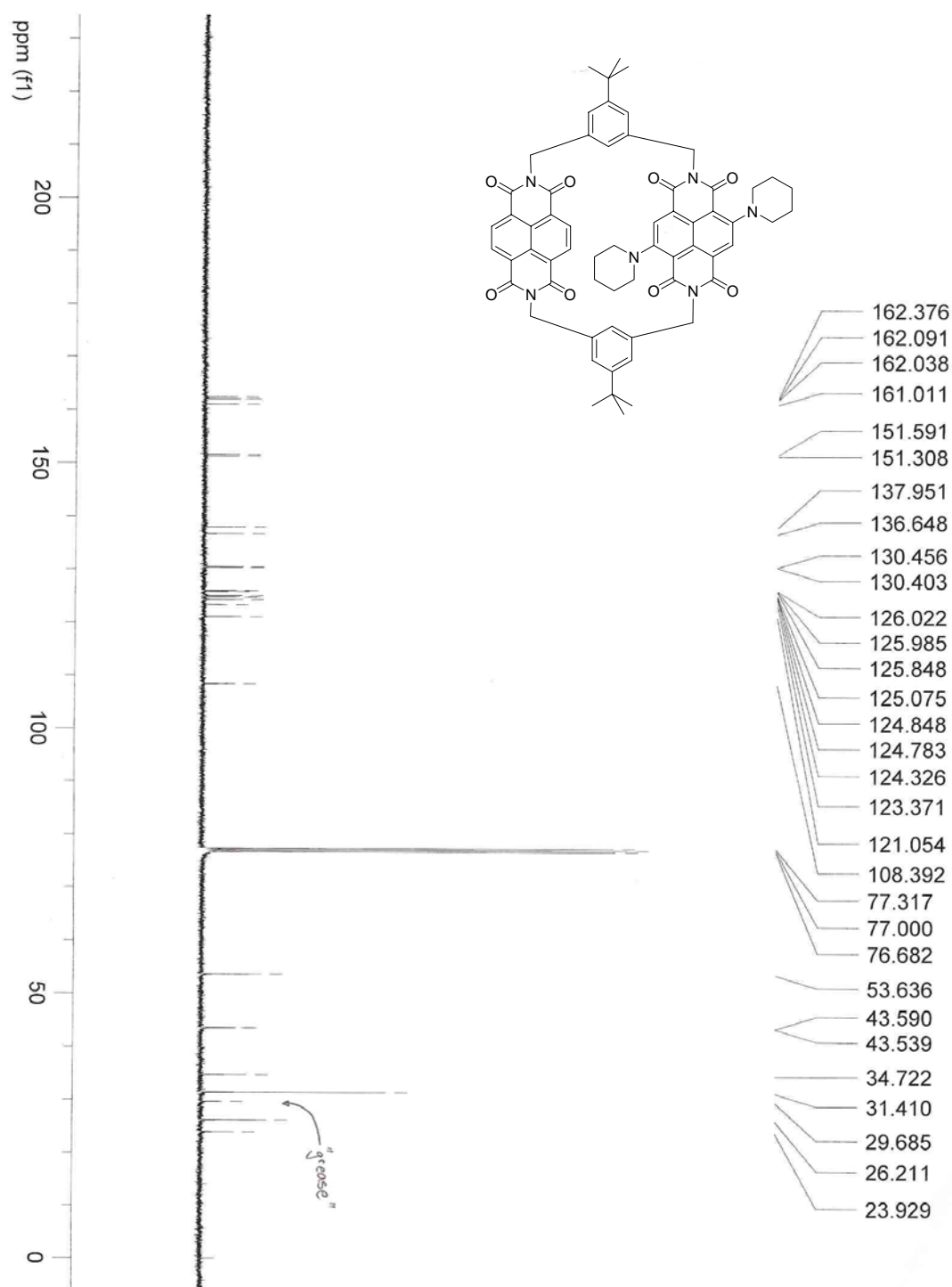


UV at 17.910 min

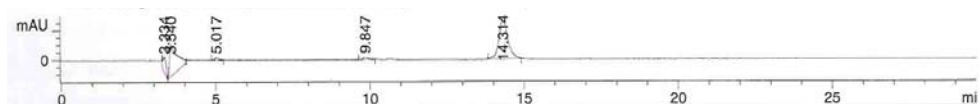


UV at 19.752 min

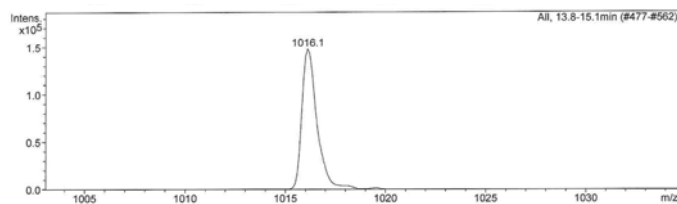
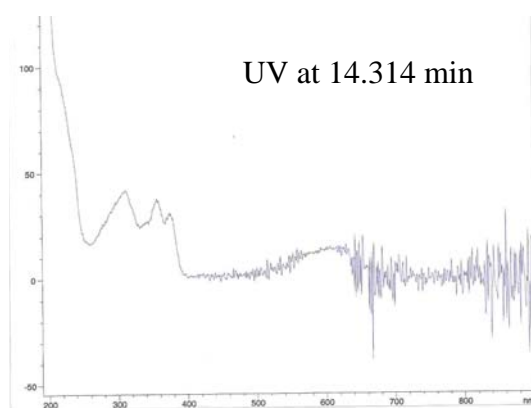
5. Characterisation of asymmetric asymmetric ((CH₂)₅N)₂-NDI cyclophane (4)**¹H-NMR spectra**

¹³C-NMR spectra

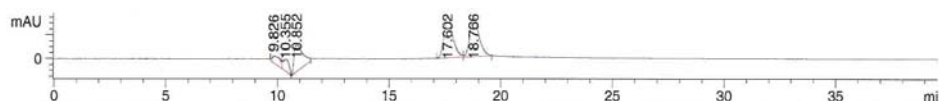
HPLC-ESI-MS



| Peak # | RetTime [min] | Type | Width [min] | Area [mAU*s] | Height [mAU] | Area % |
|----------|---------------|------|-------------|--------------|--------------|---------|
| 1 | 3.334 | BP | 0.1104 | 72.40755 | 10.24580 | 7.1509 |
| 2 | 3.540 | VB | 0.2194 | 357.85532 | 21.58412 | 35.3417 |
| 3 | 5.017 | PB | 0.1429 | 15.41575 | 1.65210 | 1.5225 |
| 4 | 9.847 | PB | 0.2097 | 17.29118 | 1.20293 | 1.7077 |
| 5 | 14.314 | BB | 0.2946 | 549.58966 | 27.56345 | 54.2773 |
| Totals : | | | | 1012.55946 | 62.24840 | |



Chiral HPLC



| Peak # | RetTime [min] | Type | Width [min] | Area [mAU*s] | Height [mAU] | Area % |
|--------|---------------|------|-------------|--------------|--------------|---------|
| 1 | 9.826 | BV | 0.3604 | 164.53619 | 5.74107 | 5.6566 |
| 2 | 10.355 | VP | 0.3140 | 192.15764 | 10.00996 | 6.6062 |
| 3 | 10.852 | VB | 0.3926 | 603.66461 | 22.67355 | 20.7535 |
| 4 | 17.602 | BV | 0.4169 | 971.71588 | 35.11010 | 33.4068 |
| 5 | 18.766 | VB | 0.4300 | 976.66461 | 33.91465 | 33.5769 |

Totals : 2908.73894 107.44932

