

Supporting Information for

Modulation of the energy levels by the variation of the donor: an efficient approach for elevating the efficiency of Zinc-porphyrin based solar cells

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Table of contents

Fig. 1 The ¹ H NMR spectrum of 1a in CDCl ₃	S3
Fig. 2 HRMS of 1a in MeOH	S3
Fig. 3 The ¹ H NMR spectrum of 2a in CDCl ₃	S4
Fig. 4 HRMS of 2a in MeOH	S4
Fig. 5 The ¹ H NMR spectrum of 3a in CDCl ₃	S5
Fig. 6 HRMS of 3a in MeOH	S5
Fig. 7 The ¹ H NMR spectrum of 4a in DMSO- <i>d</i> ₆ : CDCl ₃ = 3 : 1	S6
Fig. 8 HRMS of 4a in MeOH	S6
Fig. 9 The ¹ H NMR spectrum of T2P in DMSO- <i>d</i> ₆	S7
Fig. 10 HRMS of T2P in MeOH	S7
Fig. 11 The ¹ H NMR spectrum of 1b in CDCl ₃	S8
Fig. 12 HRMS of 1b in MeOH	S8
Fig. 13 The ¹ H NMR spectrum of 2b in CDCl ₃	S9
Fig. 14 HRMS of 2b in MeOH	S9
Fig. 15 The ¹ H NMR spectrum of 3b in CDCl ₃	S10
Fig. 16 HRMS of 3b in MeOH	S10
Fig. 17 The ¹ H NMR spectrum of 4b in DMSO- <i>d</i> ₆	S11
Fig. 18 HRMS of 4b in MeOH	S11
Fig. 19 The ¹ H NMR spectrum of MT2P in DMSO- <i>d</i> ₆	S12
Fig. 20 HRMS of MT2P in MeOH	S12
Fig. 21 The ¹ H NMR spectrum of 1c in CDCl ₃	S13
Fig. 22 HRMS of 1c in MeOH	S13
Fig. 23 The ¹ H NMR spectrum of 2c in CDCl ₃	S14
Fig. 24 HRMS of 2c in MeOH	S14
Fig. 25 The ¹ H NMR spectrum of 3c in CDCl ₃	S15
Fig. 26 HRMS of 3c in MeOH	S15
Fig. 27 The ¹ H NMR spectrum of 4c in DMSO- <i>d</i> ₆	S16

Fig. 28 HRMS of 4c in MeOH	S16
Fig. 29 The ¹ H NMR spectrum of T3P in DMSO- <i>d</i> ₆ : CDCl ₃ = 5 : 1	S17
Fig. 30 HRMS of T3P in MeOH	S17
Fig. 31 The ¹ H NMR spectrum of 1d in CDCl ₃	S18
Fig. 32 HRMS of 1d in MeOH	S18
Fig. 33 The ¹ H NMR spectrum of 2d in CDCl ₃	S19
Fig. 34 HRMS of 2d in MeOH	S19
Fig. 35 The ¹ H NMR spectrum of 3d in CDCl ₃	S20
Fig. 36 HRMS of 3d in MeOH	S20
Fig. 37 The ¹ H NMR spectrum of 4d in DMSO- <i>d</i> ₆	S21
Fig. 38 HRMS of 4d in MeOH	S21
Fig. 39 The ¹ H NMR spectrum of MT3P in DMSO- <i>d</i> ₆	S22
Fig. 40 HRMS of MT3P in MeOH	S22
Fig. 41 The ¹ H NMR spectrum of 1e in CDCl ₃	S23
Fig. 42 HRMS of 1e in MeOH	S23
Fig. 43 The ¹ H NMR spectrum of 2e in CDCl ₃	S24
Fig. 44 HRMS of 2e in MeOH	S24
Fig. 45 The ¹ H NMR spectrum of 3e in CDCl ₃	S25
Fig. 46 HRMS of 3e in MeOH	S25
Fig. 47 The ¹ H NMR spectrum of 4e in CDCl ₃	S26
Fig. 48 HRMS of 4e in MeOH	S26
Fig. 49 The ¹ H NMR spectrum of M3T2P in DMSO- <i>d</i> ₆	S27
Fig. 50 HRMS of M3T2P in MeOH	S27
Fig. 51 The optimized structures of T2P , T3P , MT2P , MT3P and M3T2P dyes	S27

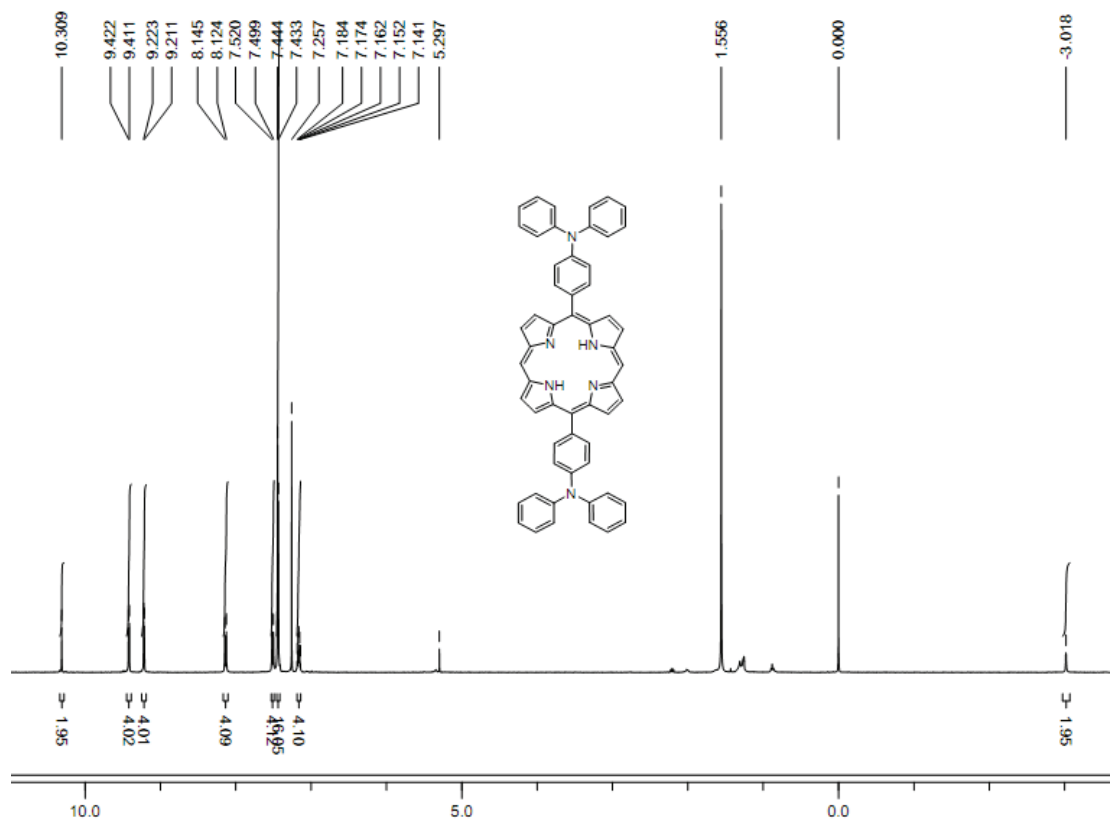


Fig. 1 The ^1H NMR spectrum of **1a** in CDCl_3

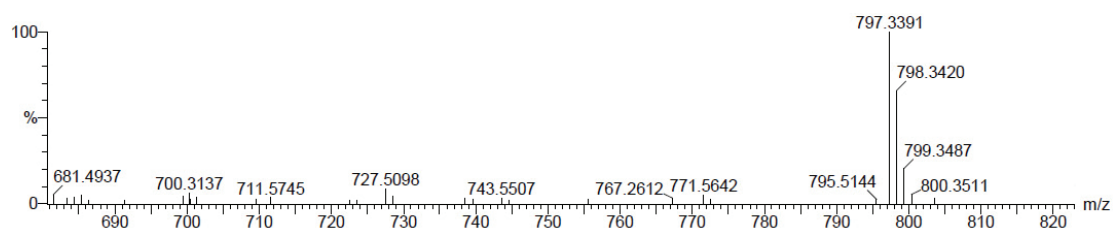


Fig. 2 HRMS of **1a** in MeOH

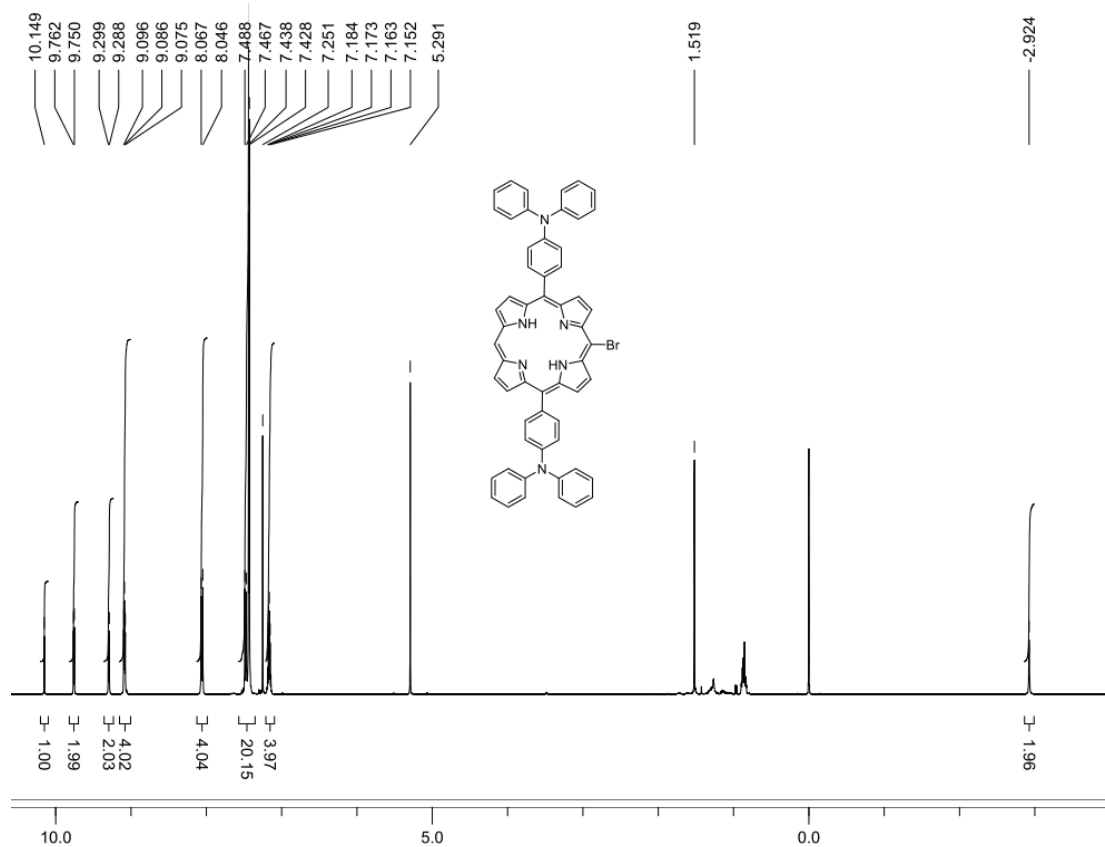


Fig. 3 The ^1H NMR spectrum of **2a** in CDCl_3

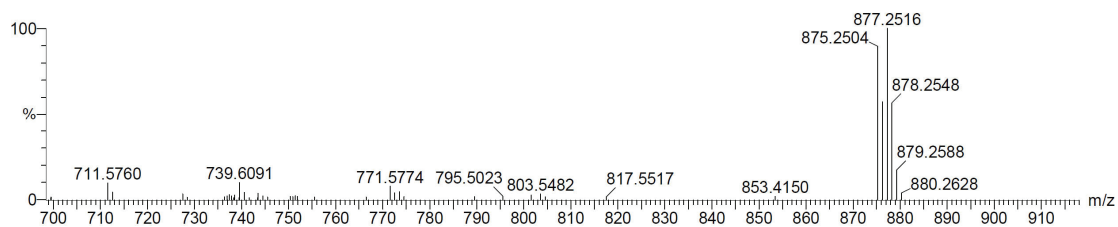


Fig. 4 HRMS of **2a** in MeOH

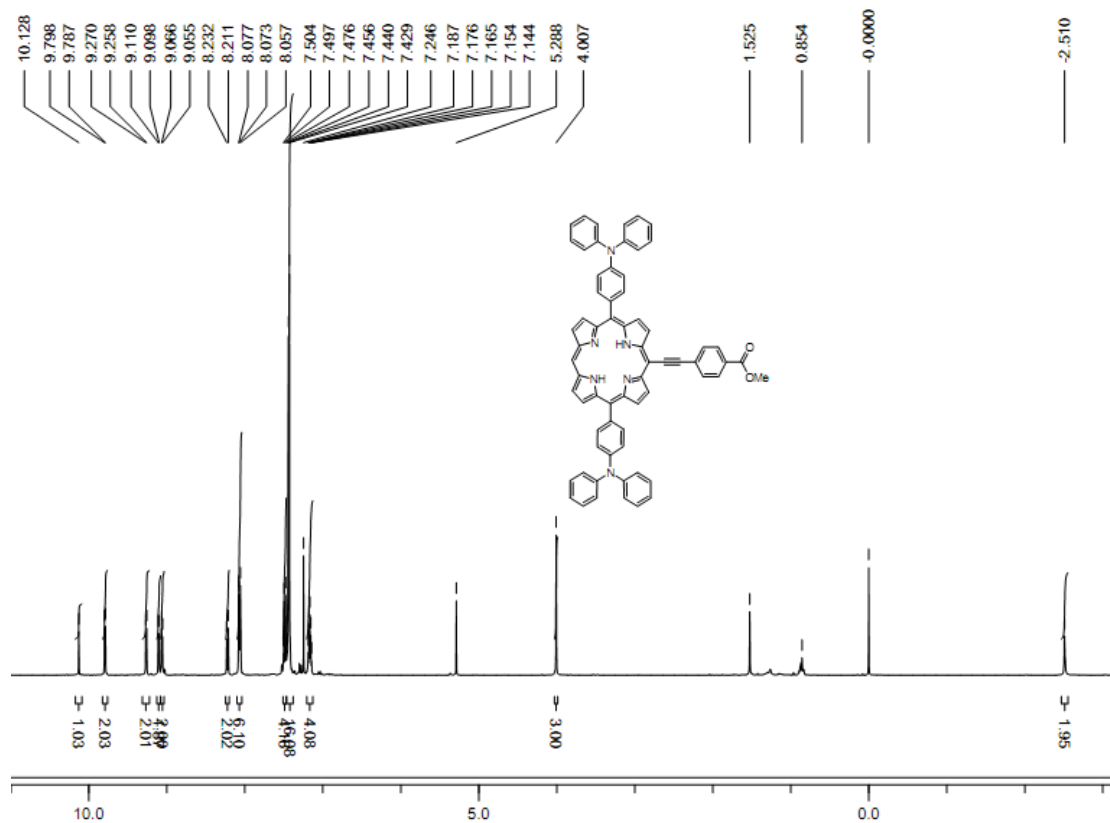


Fig. 5 The ^1H NMR spectrum of **3a** in CDCl_3

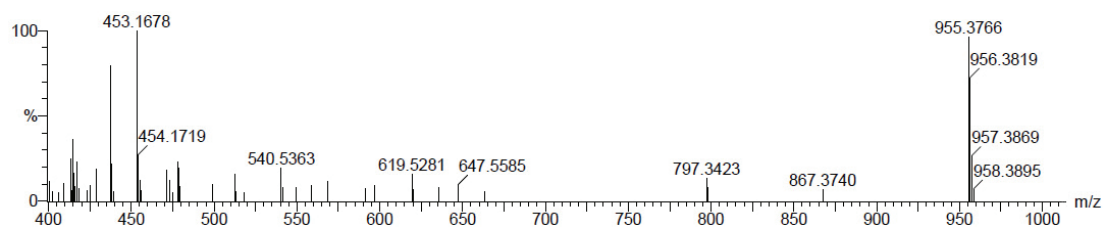


Fig. 6 HRMS of **3a** in MeOH

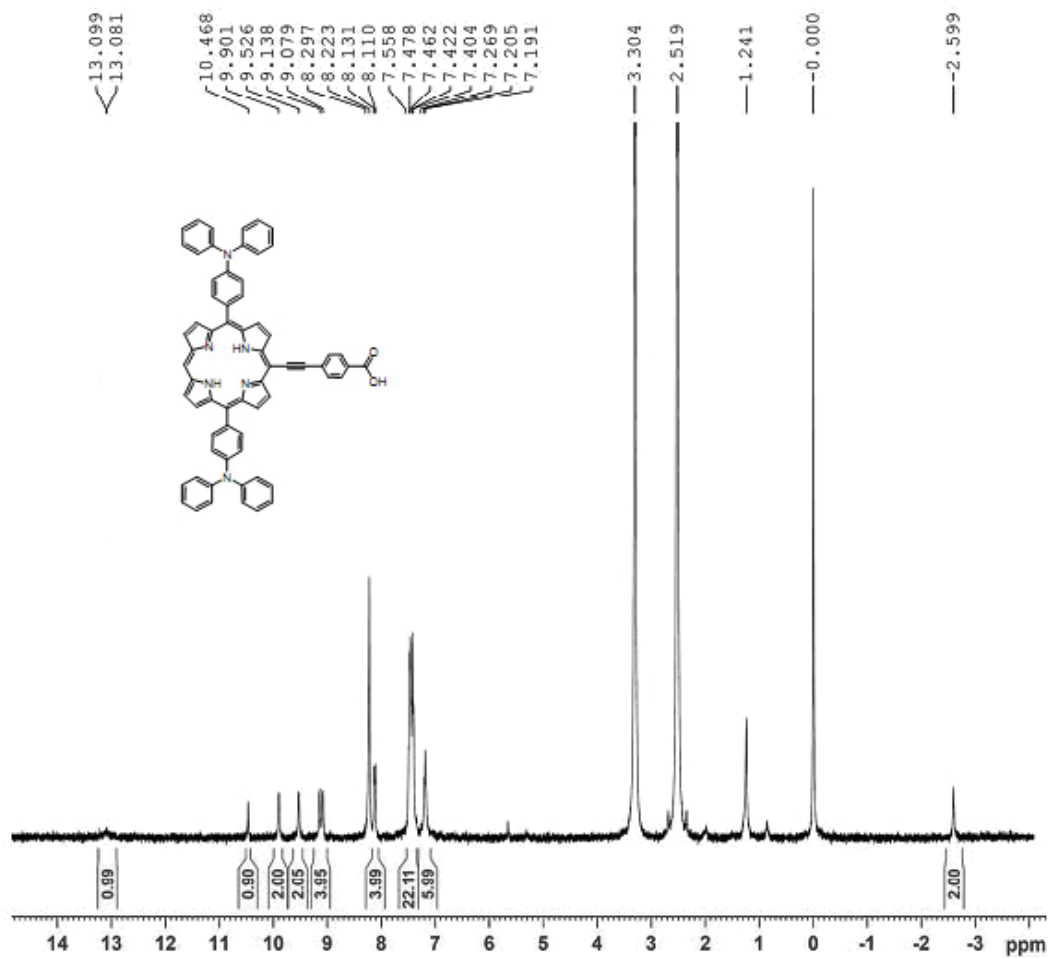


Fig. 7 The ¹H NMR spectrum of **4a** in DMSO-*d*₆ : CDCl₃ = 3 : 1

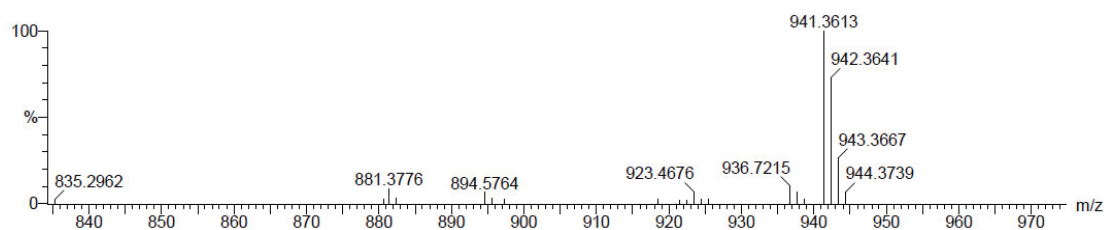


Fig. 8 HRMS of **4a** in MeOH

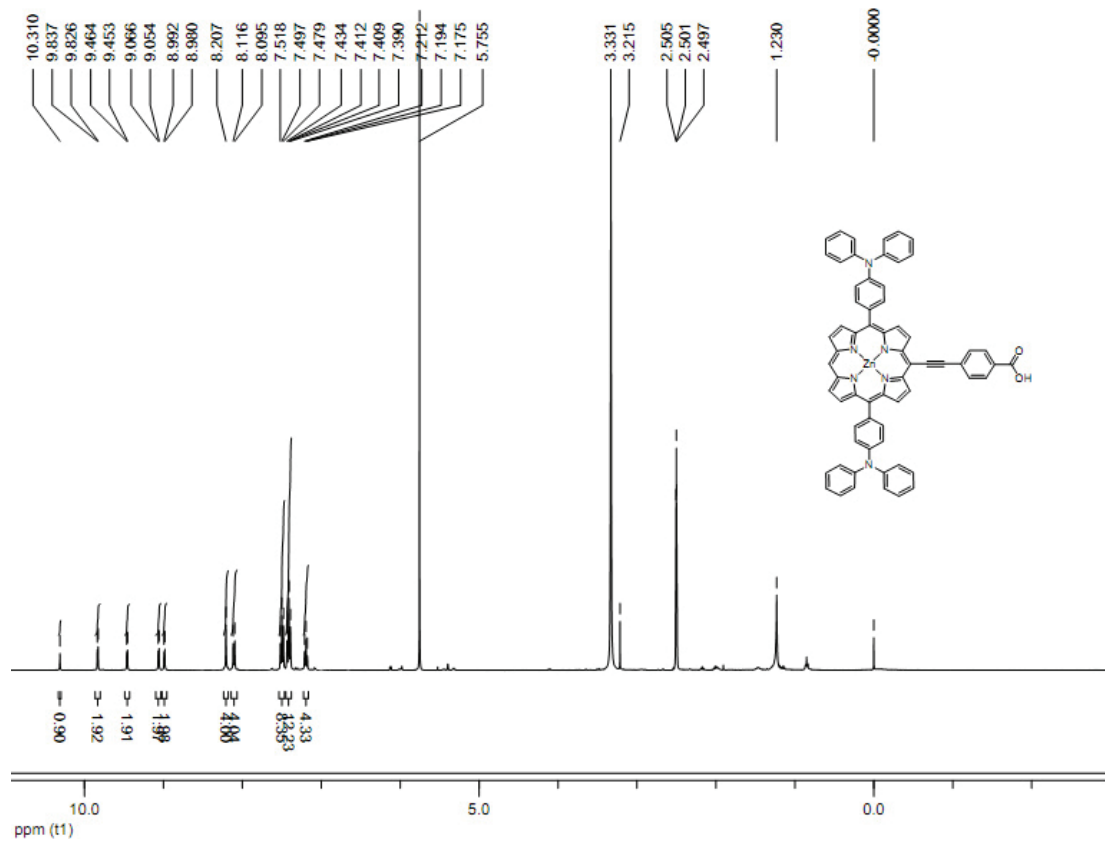


Fig. 9 The ^1H NMR spectrum of T2P in $\text{DMSO-}d_6$

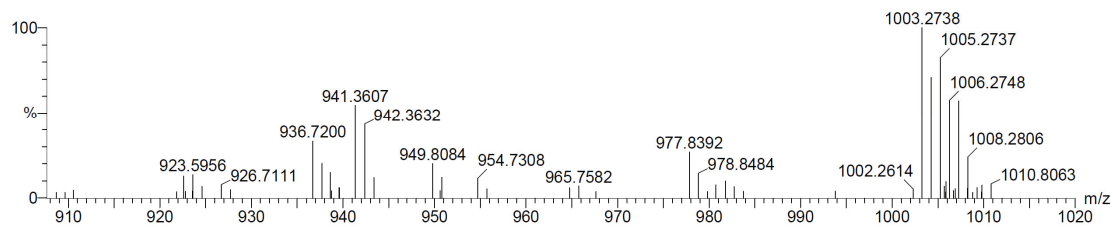


Fig. 10 HRMS of T2P in MeOH

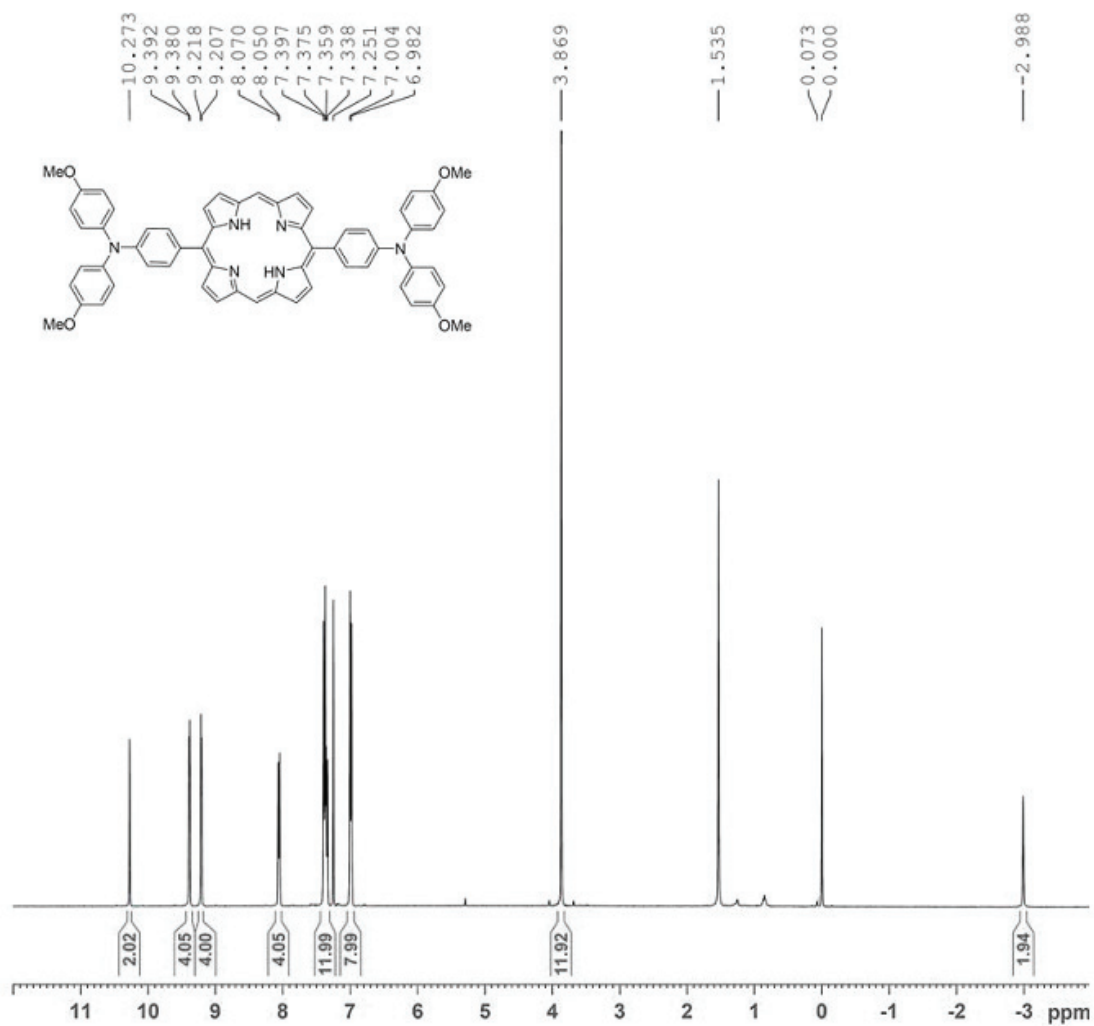


Fig. 11 The ¹H NMR spectrum of **1b** in CDCl₃

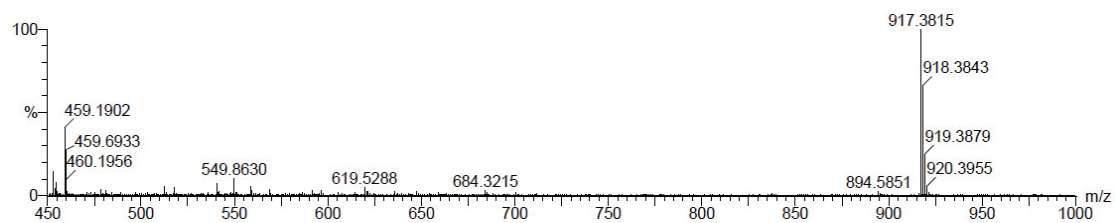


Fig. 12 HRMS of **1b** in MeOH

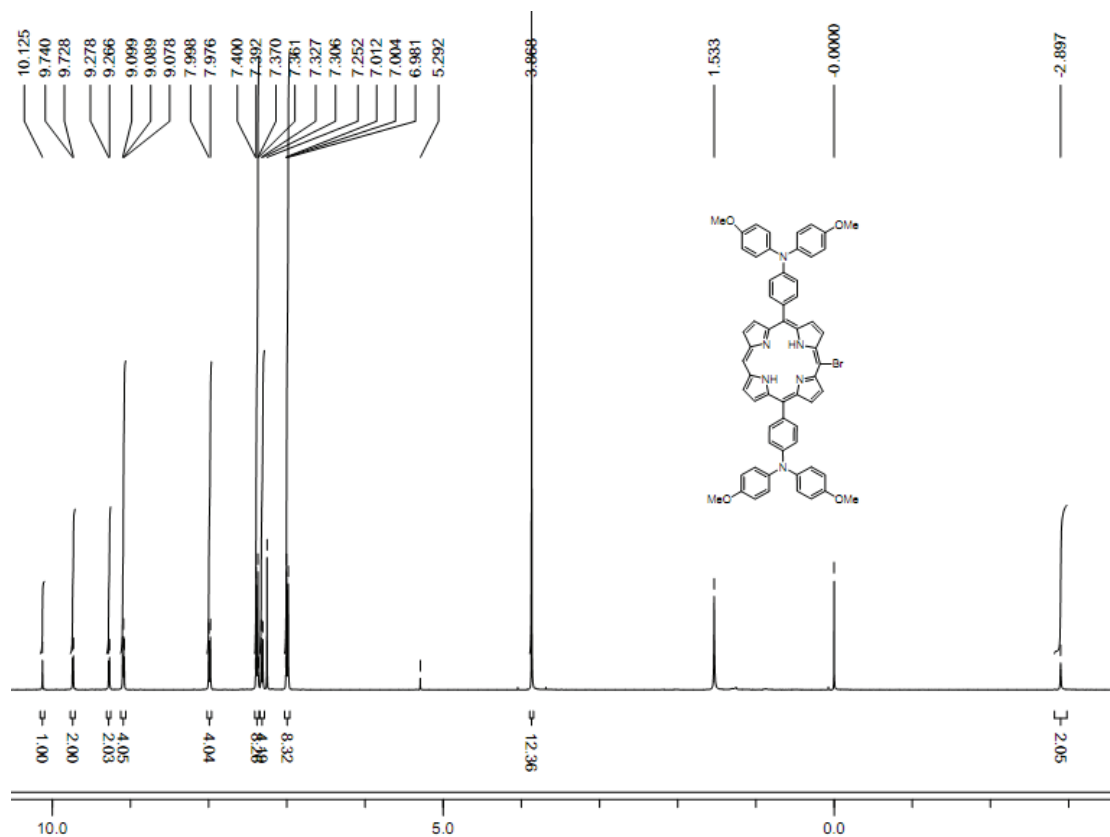


Fig. 13 The ^1H NMR spectrum of **2b** in CDCl_3

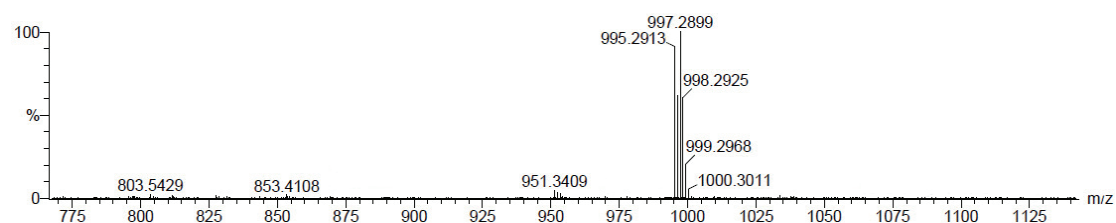


Fig. 14 HRMS of **2b** in MeOH

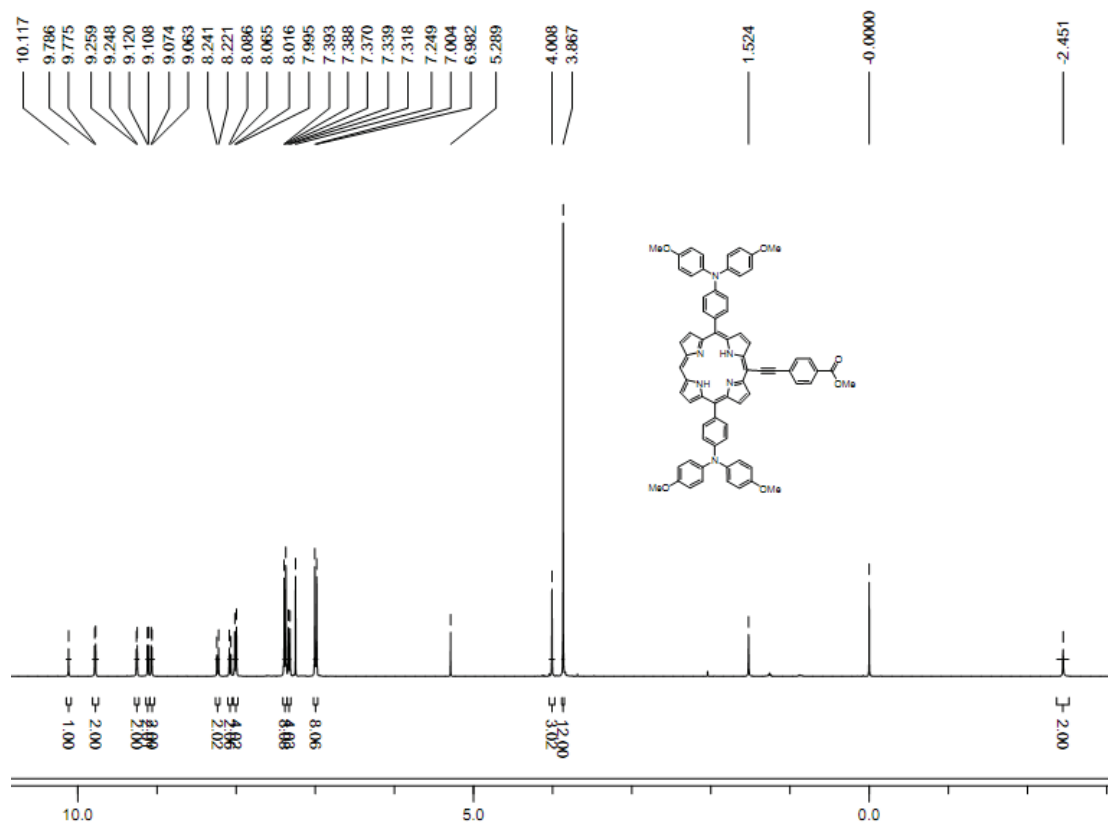


Fig. 15 The ^1H NMR spectrum of **3b** in CDCl_3

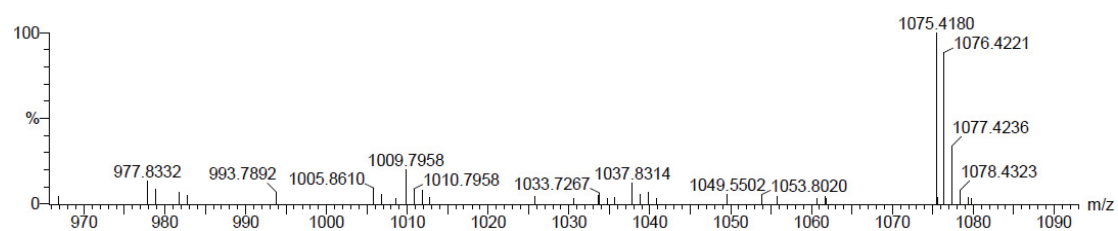


Fig. 16 HRMS of **3b** in MeOH

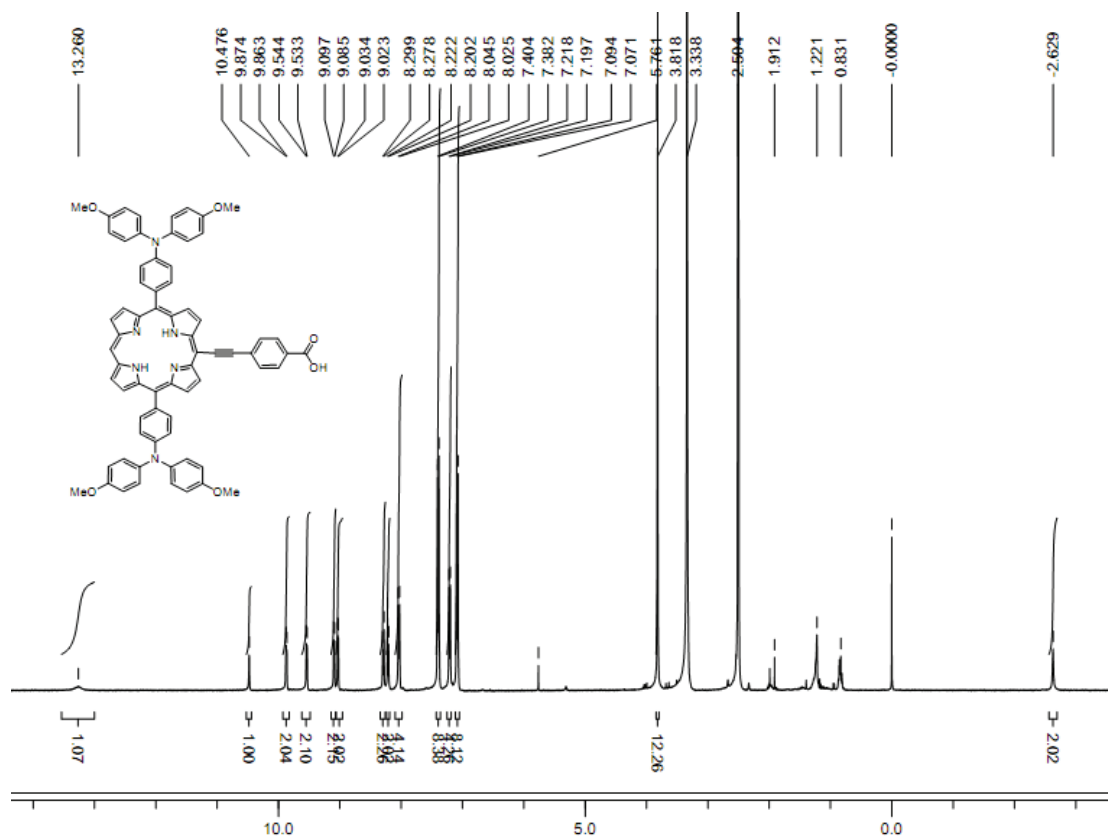


Fig. 17 The ^1H NMR spectrum of **4b** in $\text{DMSO-}d_6$

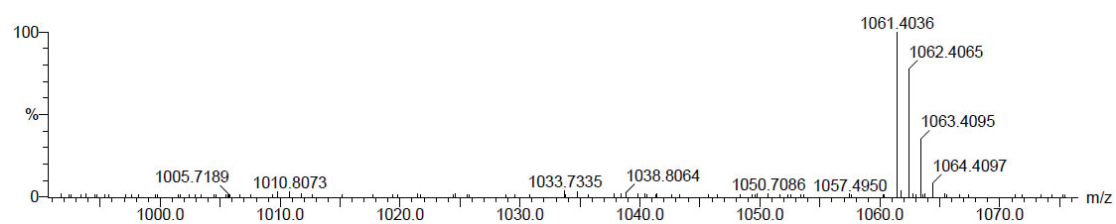


Fig. 18 HRMS of **4b** in MeOH

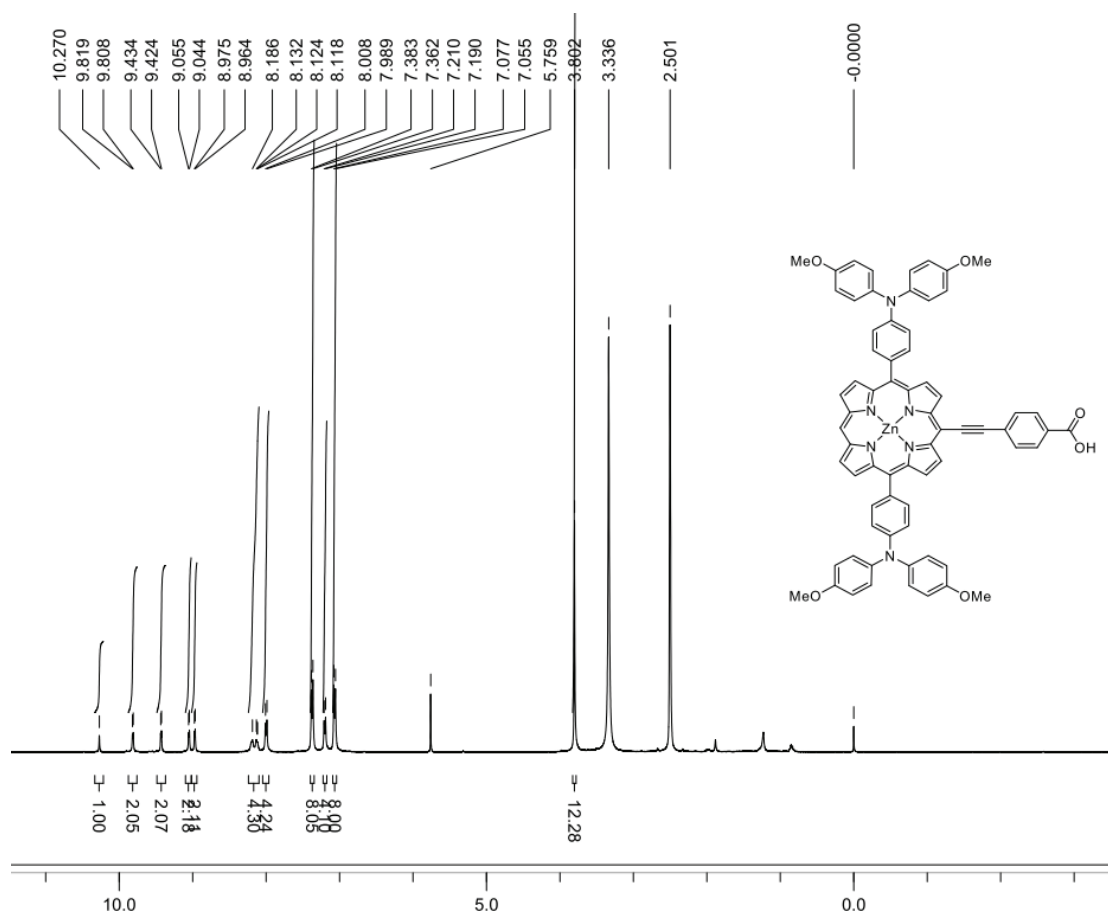


Fig. 19 The ^1H NMR spectrum of **MT2P** in $\text{DMSO-}d_6$

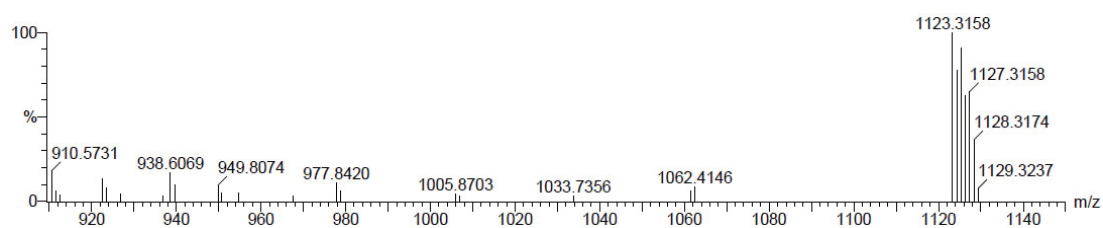


Fig. 20 HRMS of **MT2P** in MeOH

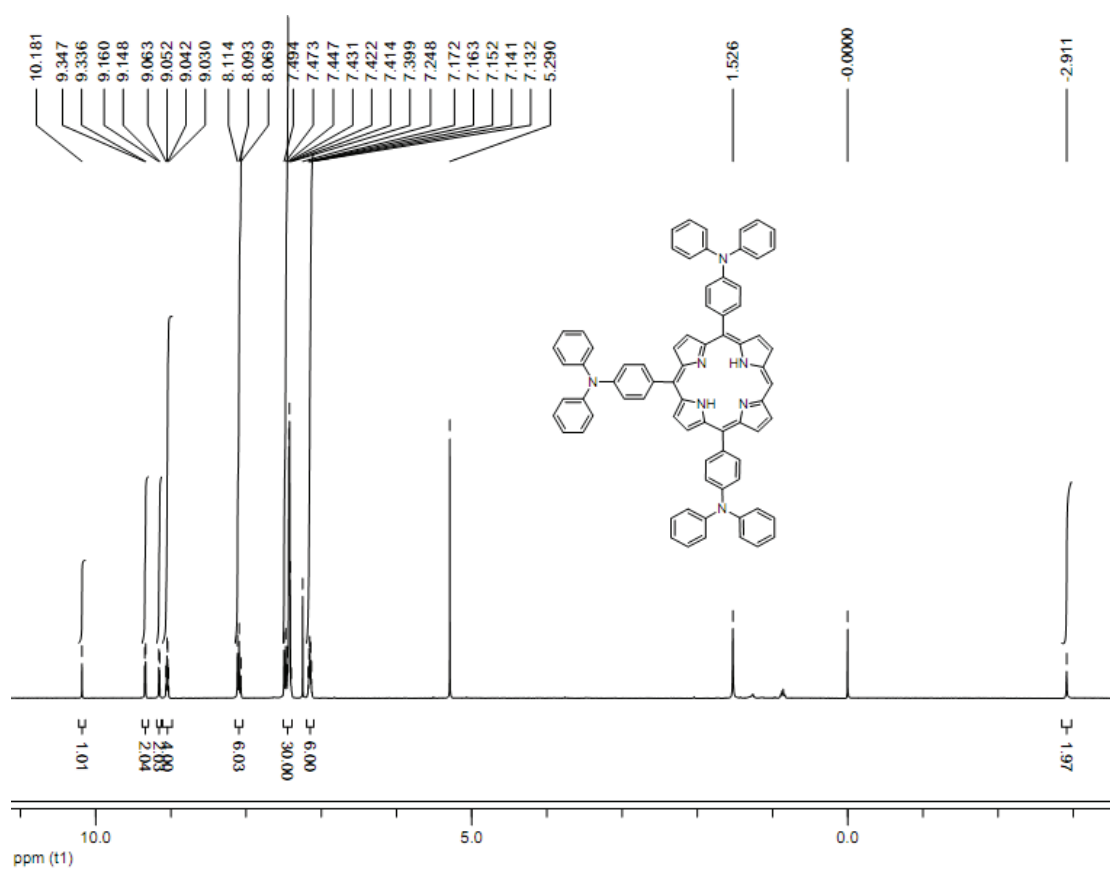


Fig. 21 The ^1H NMR spectrum of **1c** in CDCl_3

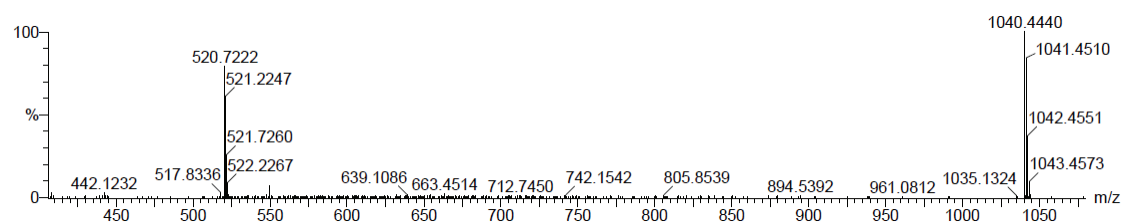


Fig. 22 HRMS of **1c** in MeOH

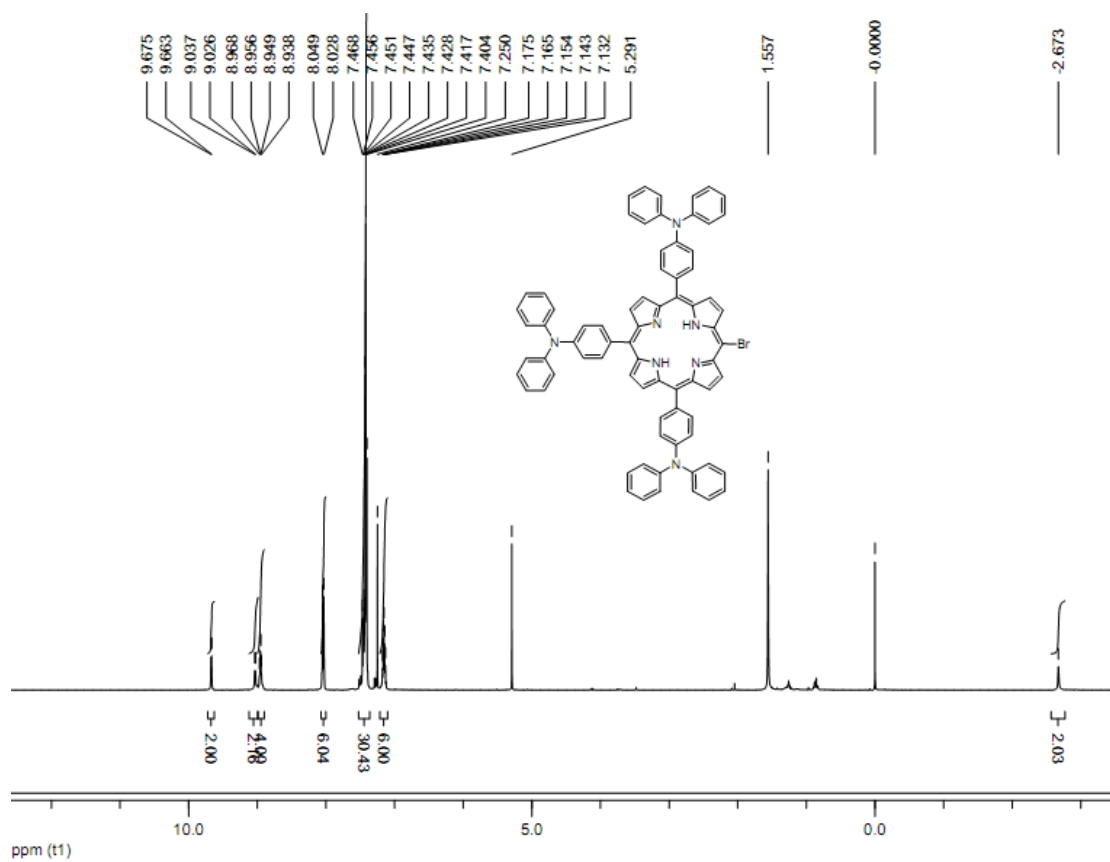


Fig. 23 The ^1H NMR spectrum of **2c** in CDCl_3

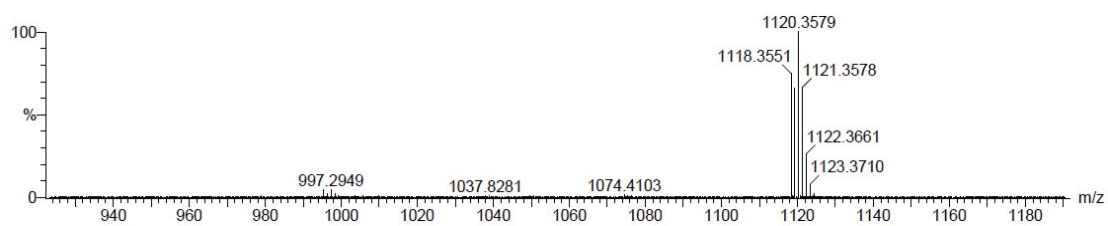


Fig. 24 HRMS of **2c** in MeOH

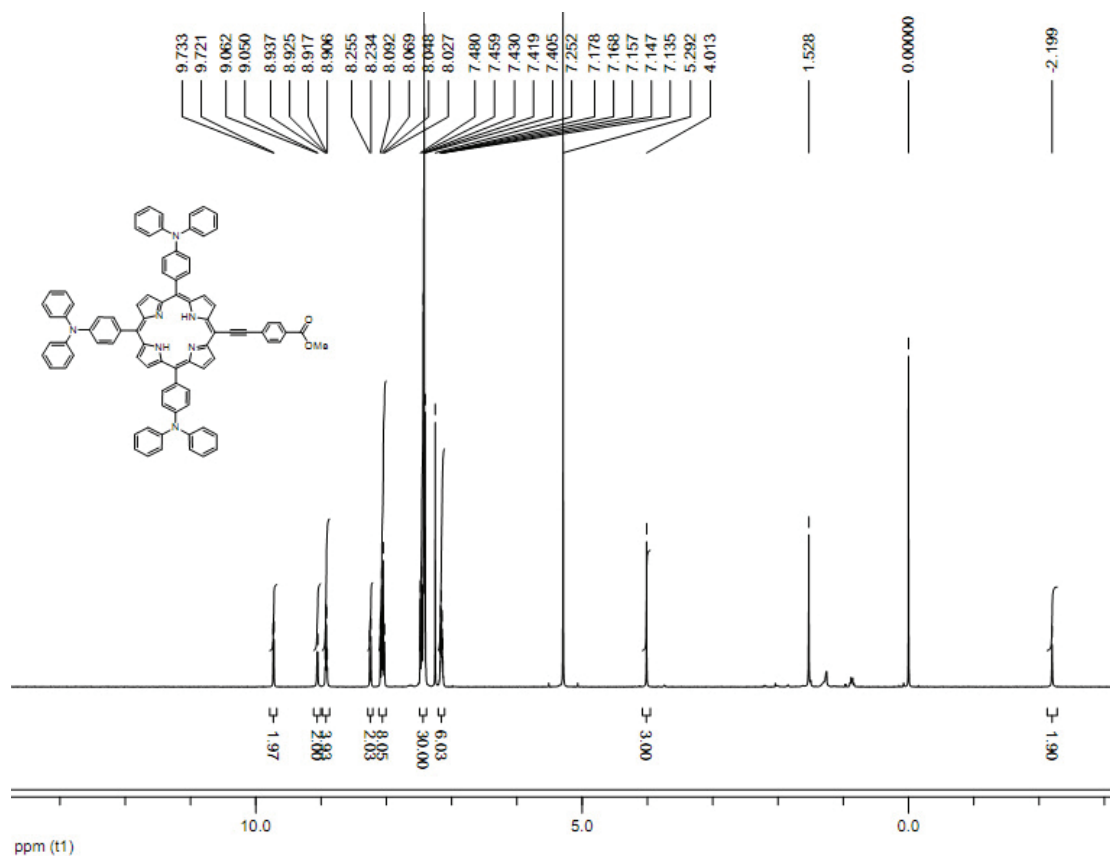


Fig. 25 The ¹H NMR spectrum of **3c** in CDCl₃

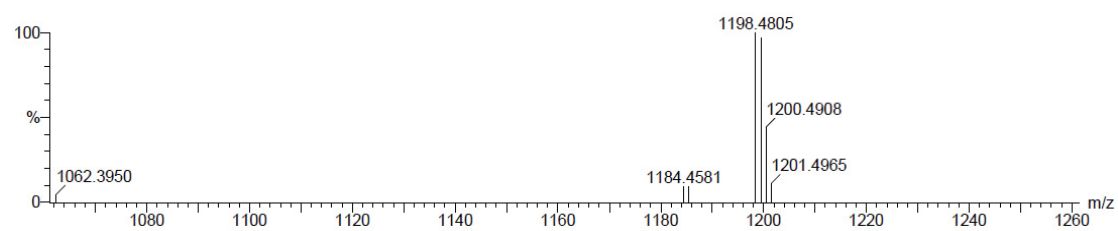


Fig. 26 HRMS of **3c** in MeOH

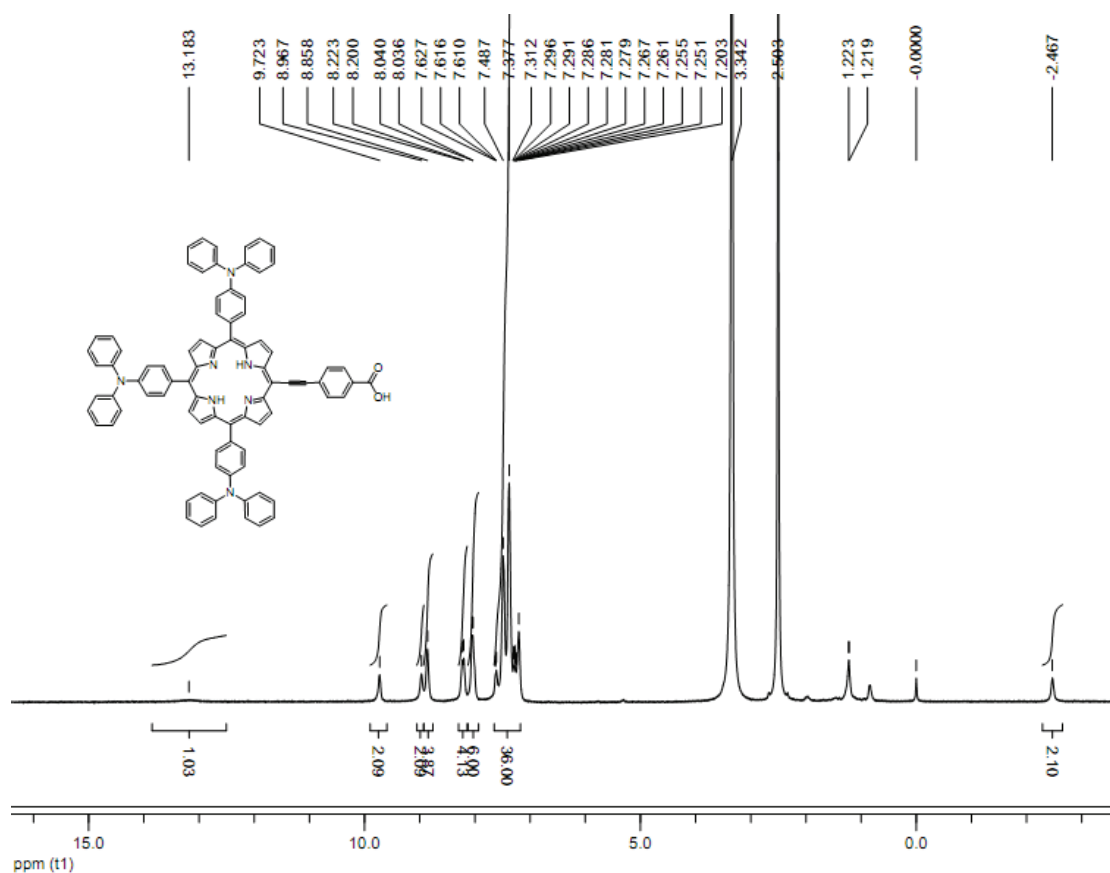


Fig. 27 The ¹H NMR spectrum of **4c** in DMSO-*d*₆

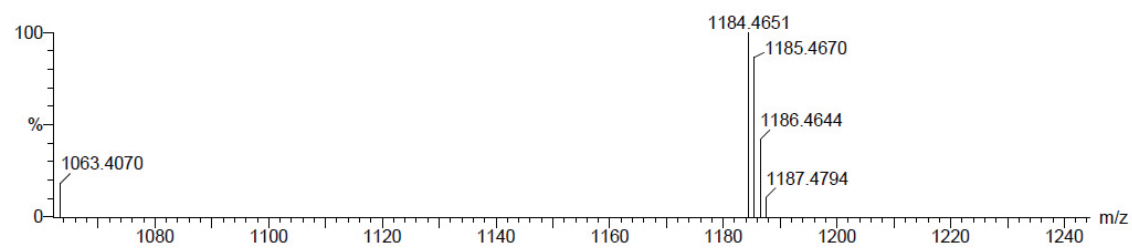


Fig. 28 HRMS of **4c** in MeOH

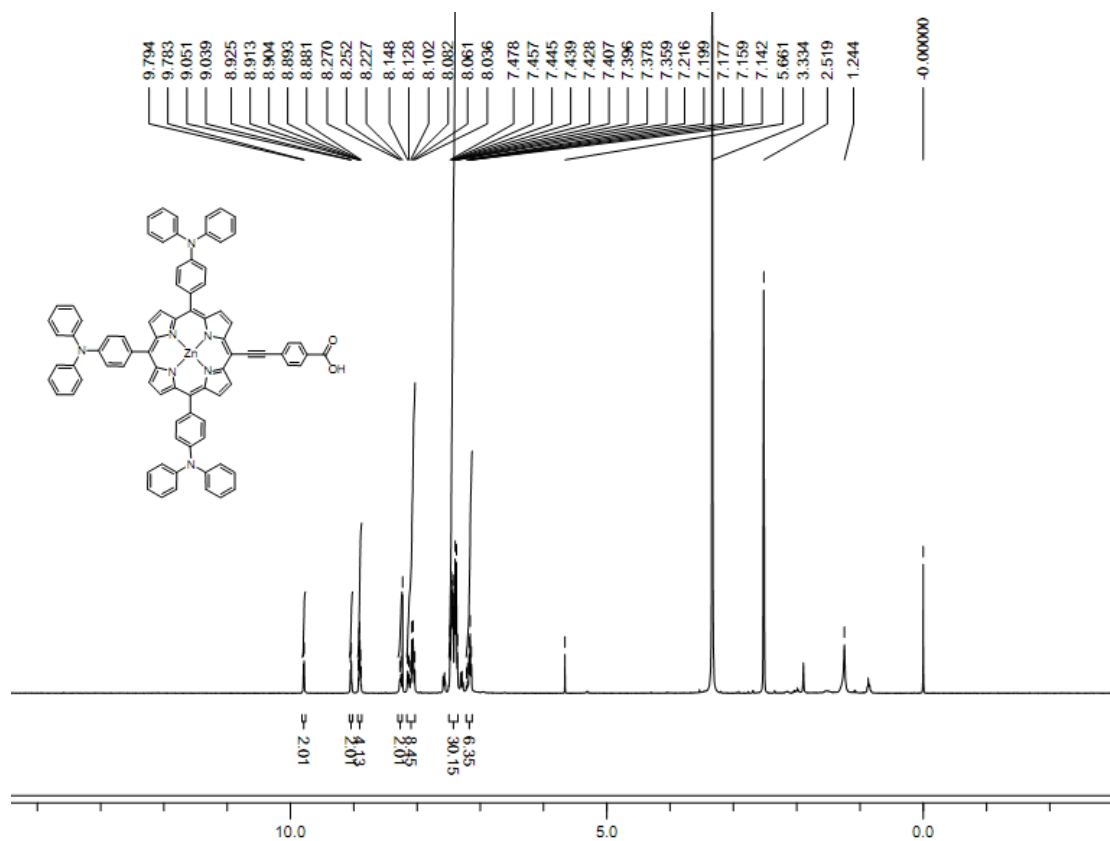


Fig. 29 The ¹H NMR spectrum of T3P in DMSO-*d*₆ : CDCl₃ = 5 : 1

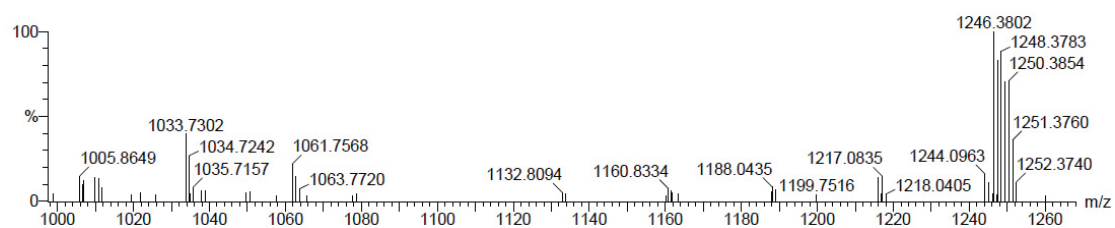


Fig. 30 HRMS of T3P in MeOH

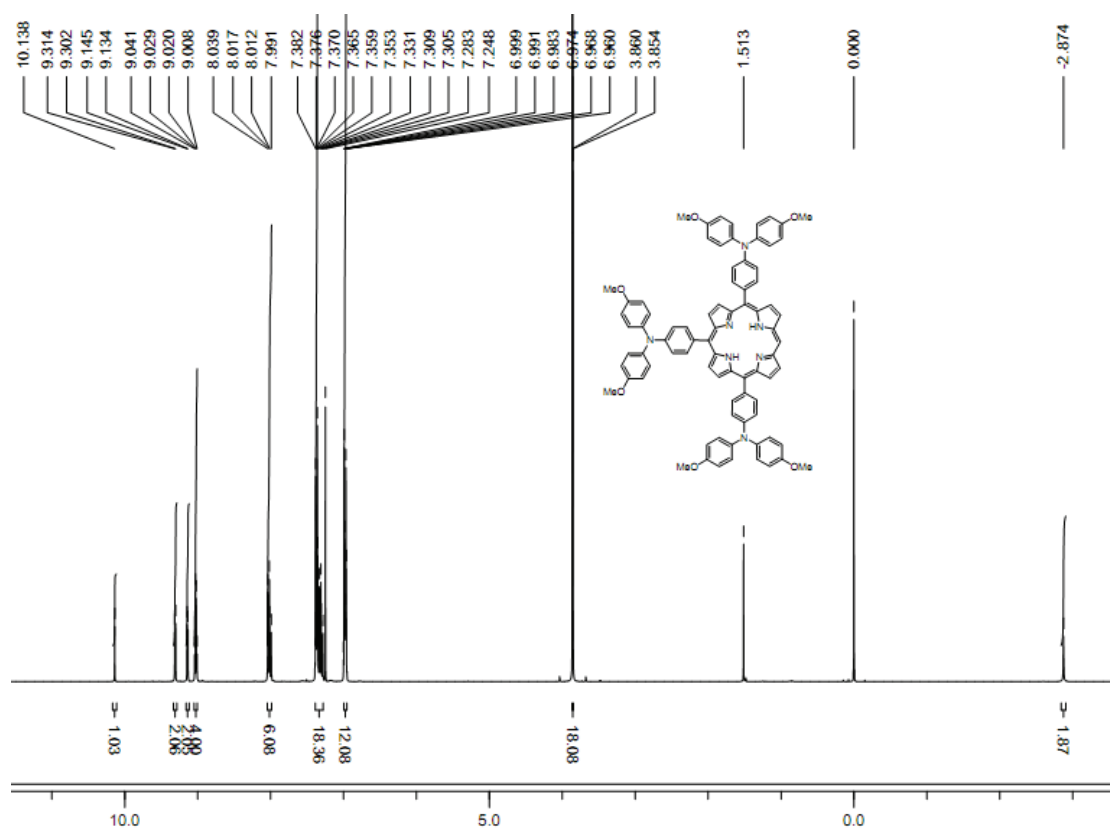


Fig. 31 The ^1H NMR spectrum of **1d** in CDCl_3

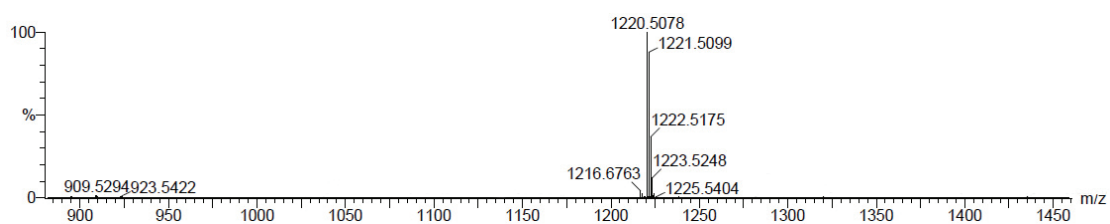


Fig. 32 HRMS of **1d** in MeOH

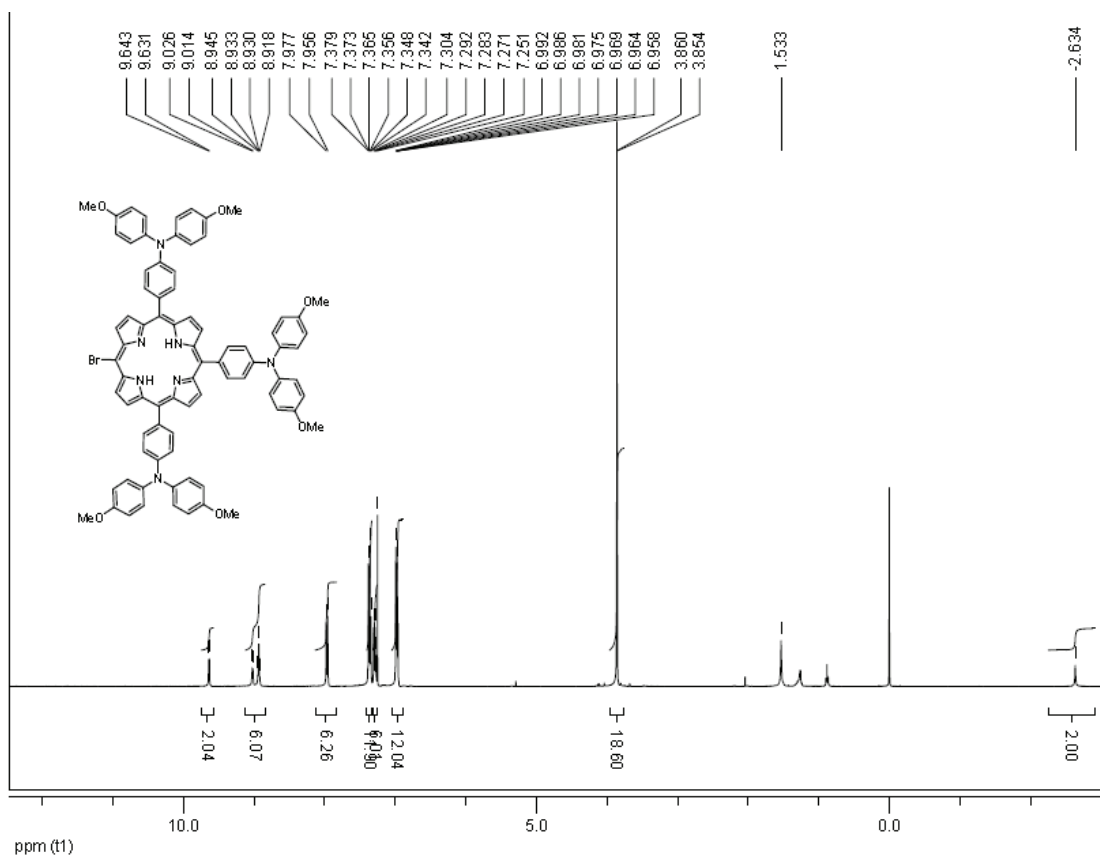


Fig. 33 The ^1H NMR spectrum of **2d** in CDCl_3

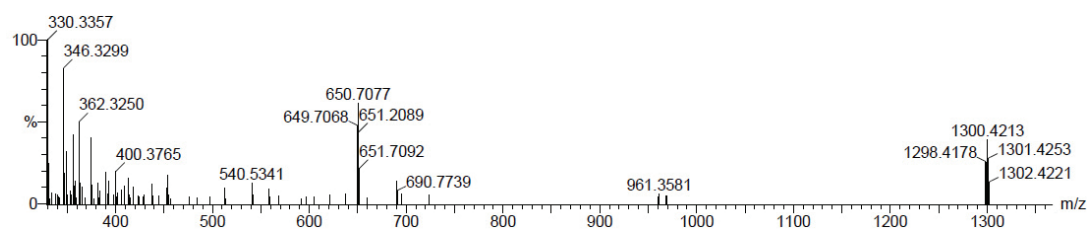


Fig. 34 HRMS of **2d** in MeOH

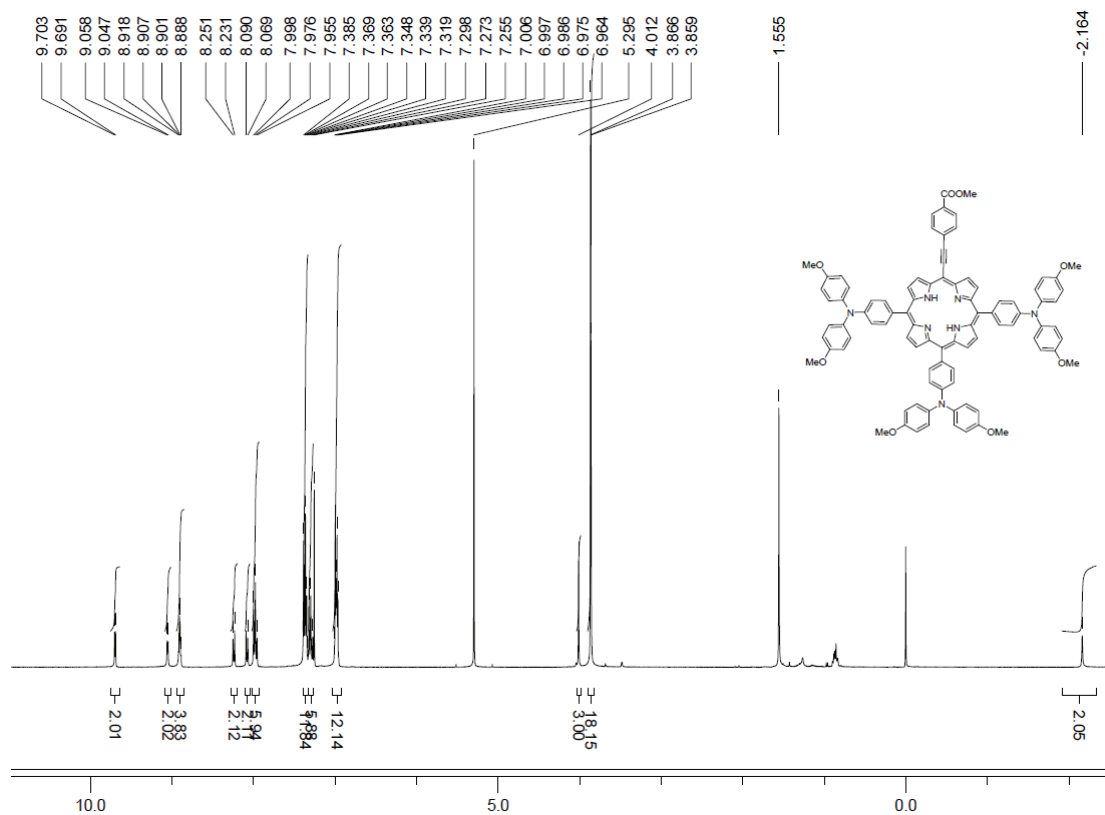


Fig. 35 The ^1H NMR spectrum of **3d** in CDCl_3

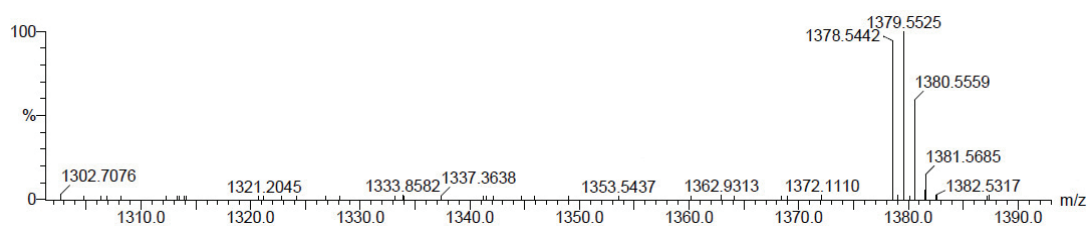


Fig. 36 HRMS of **3d** in MeOH

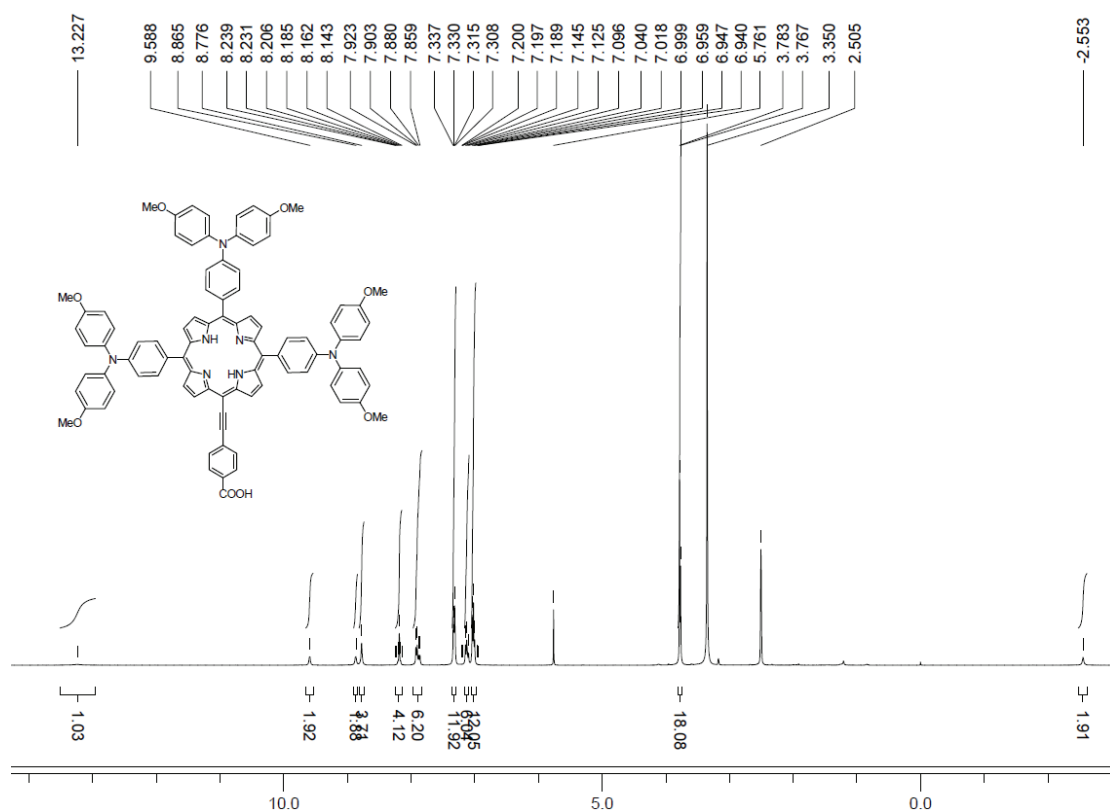


Fig. 37 The ^1H NMR spectrum of **4d** in $\text{DMSO-}d_6$

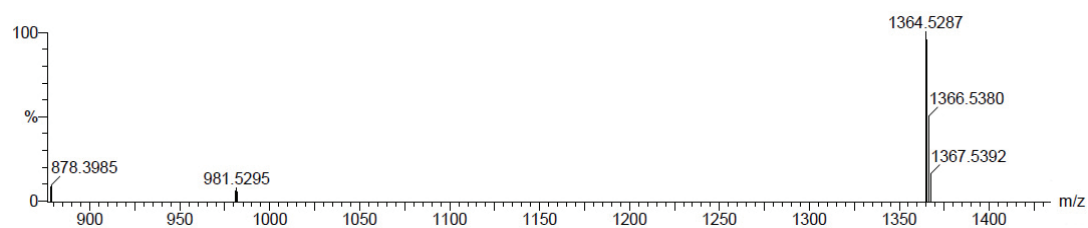


Fig. 38 HRMS of **4d** in MeOH

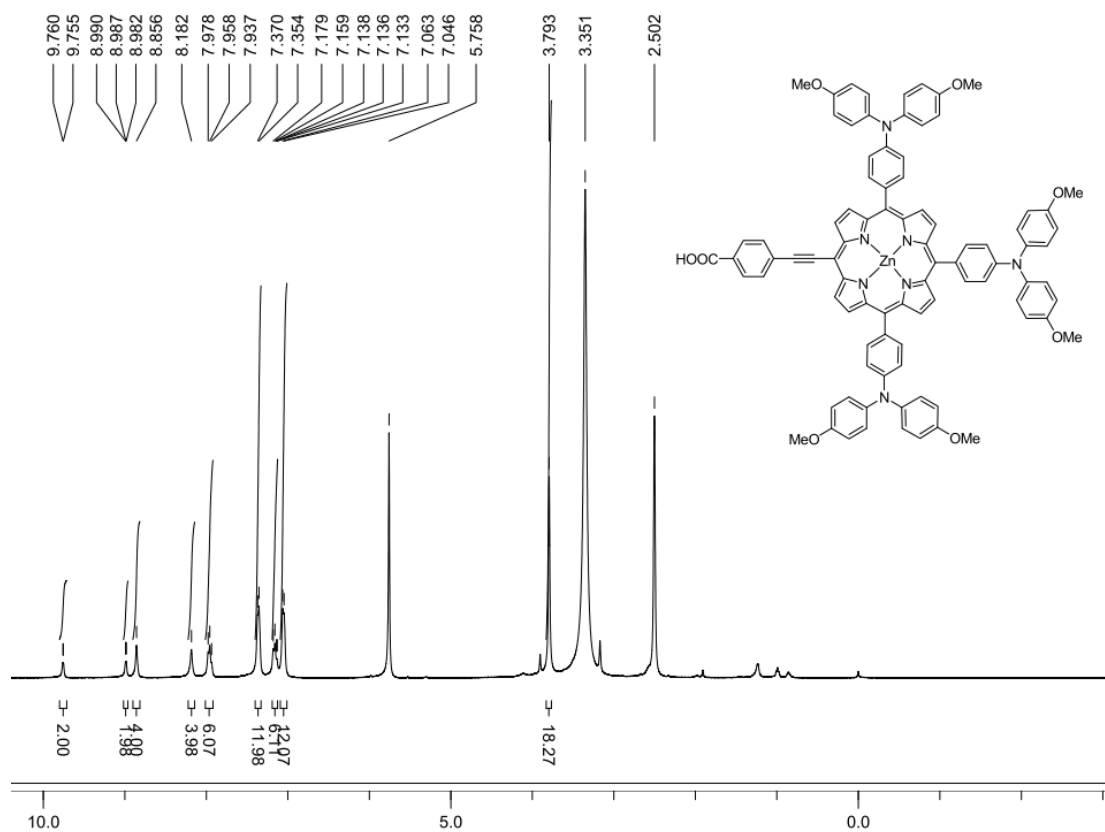


Fig. 39 The ^1H NMR spectrum of MT3P in $\text{DMSO-}d_6$

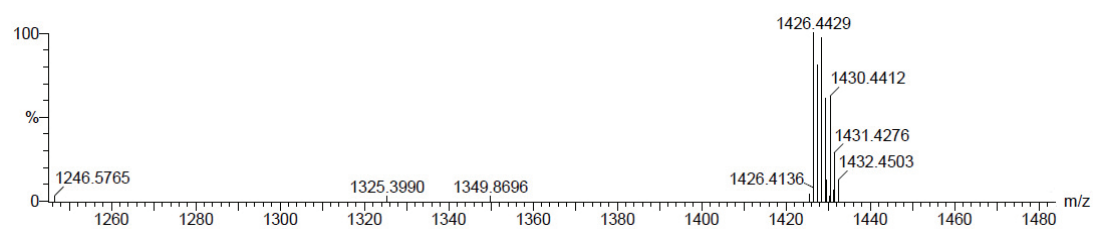


Fig. 40 HRMS of MT3P in MeOH

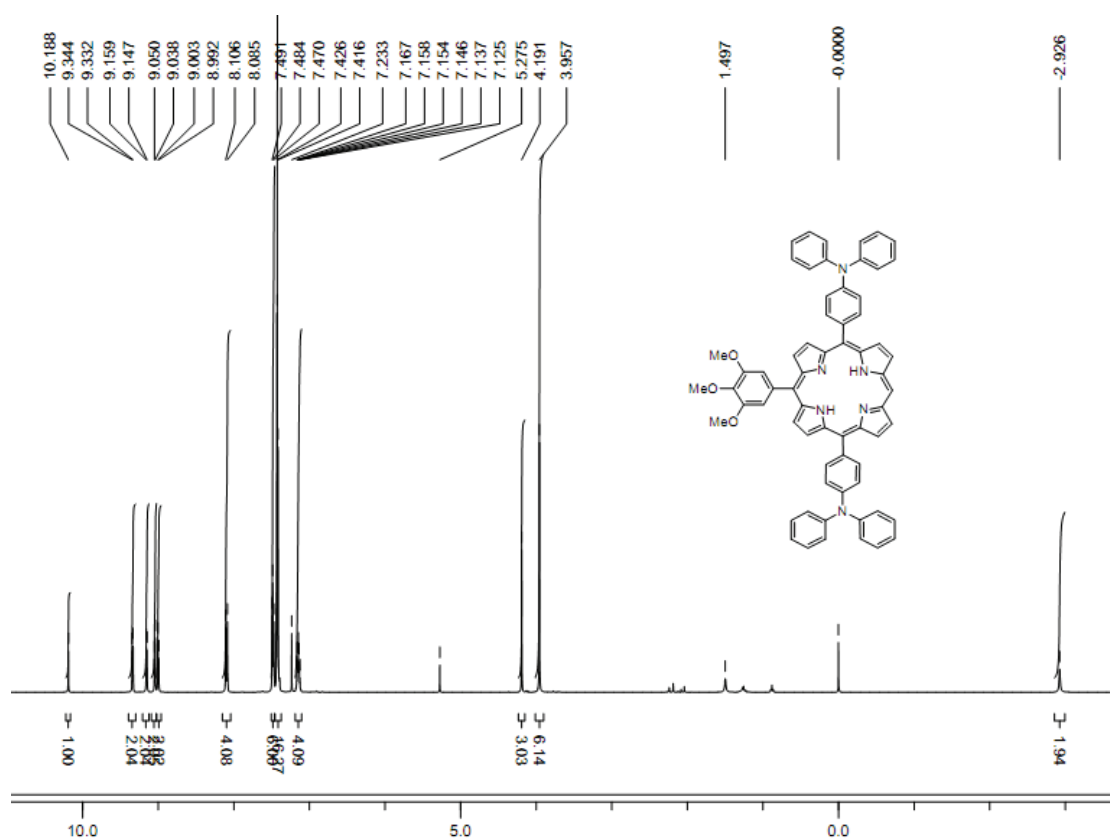


Fig. 41 The ^1H NMR spectrum of **1e** in CDCl_3

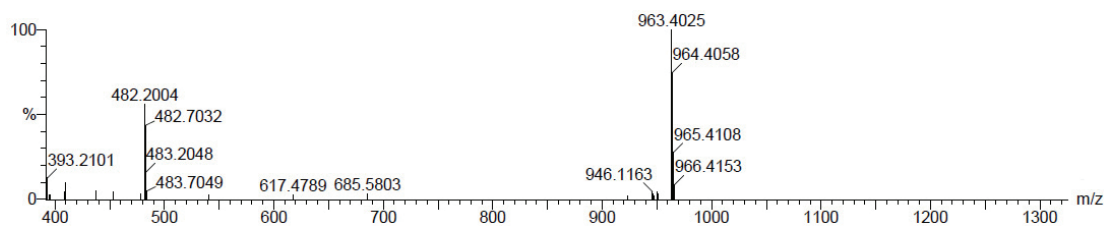


Fig. 42 HRMS of **1e** in MeOH

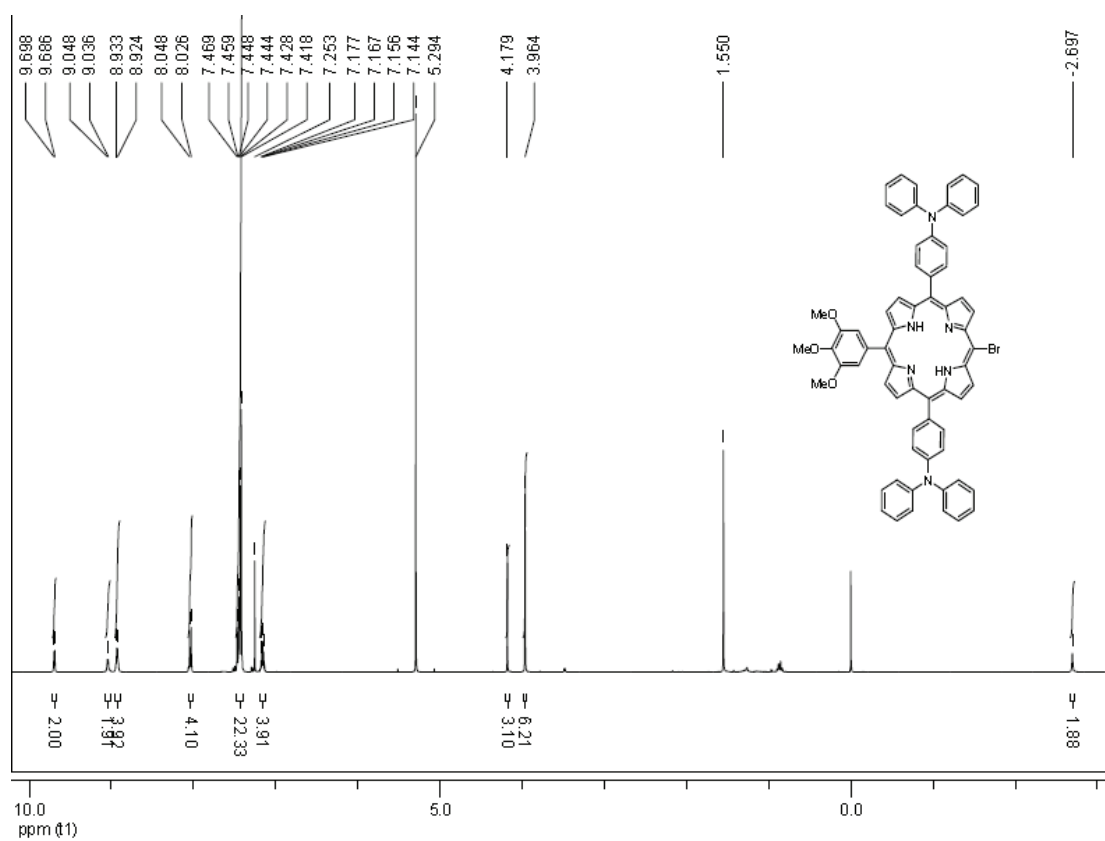


Fig. 43 The ^1H NMR spectrum of **2e** in CDCl_3

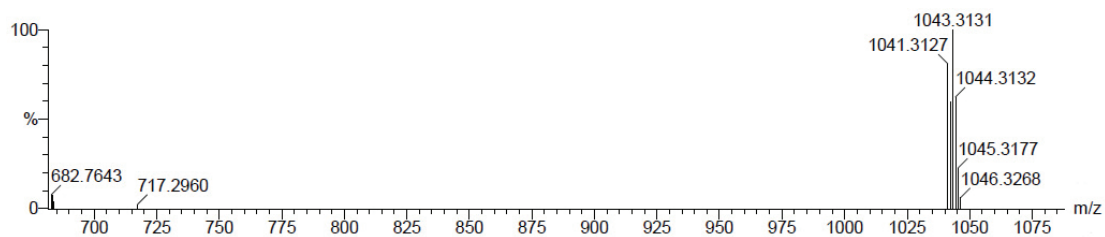


Fig. 44 HRMS of **2e** in MeOH

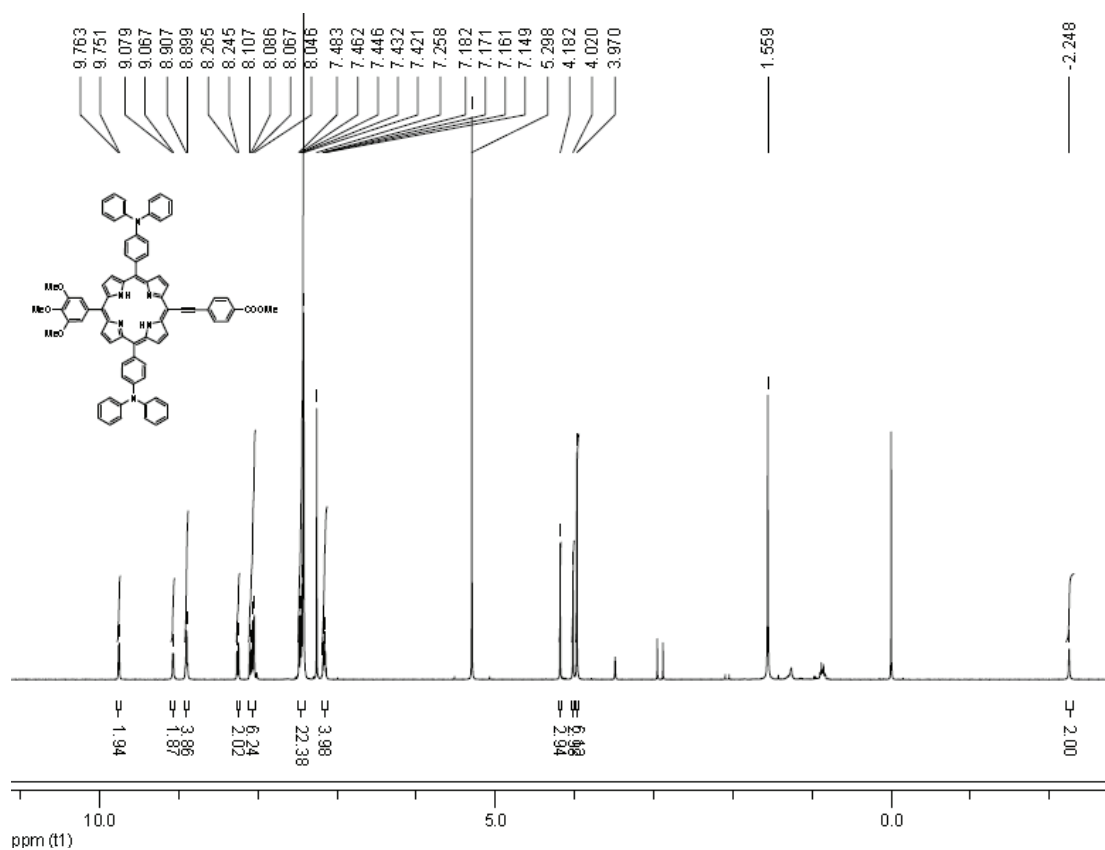


Fig. 45 The ¹H NMR spectrum of 3e in CDCl₃

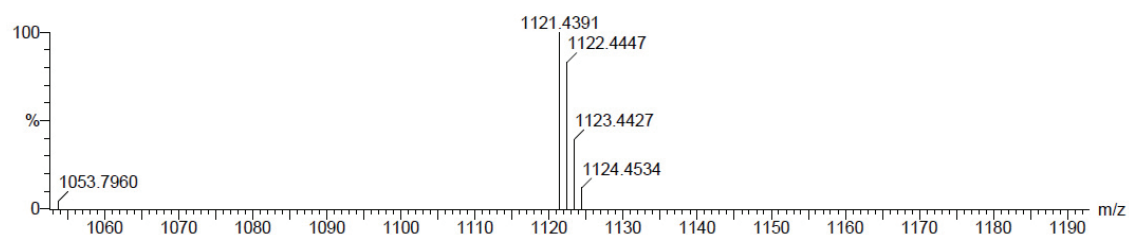


Fig. 46 HRMS of 3e in MeOH

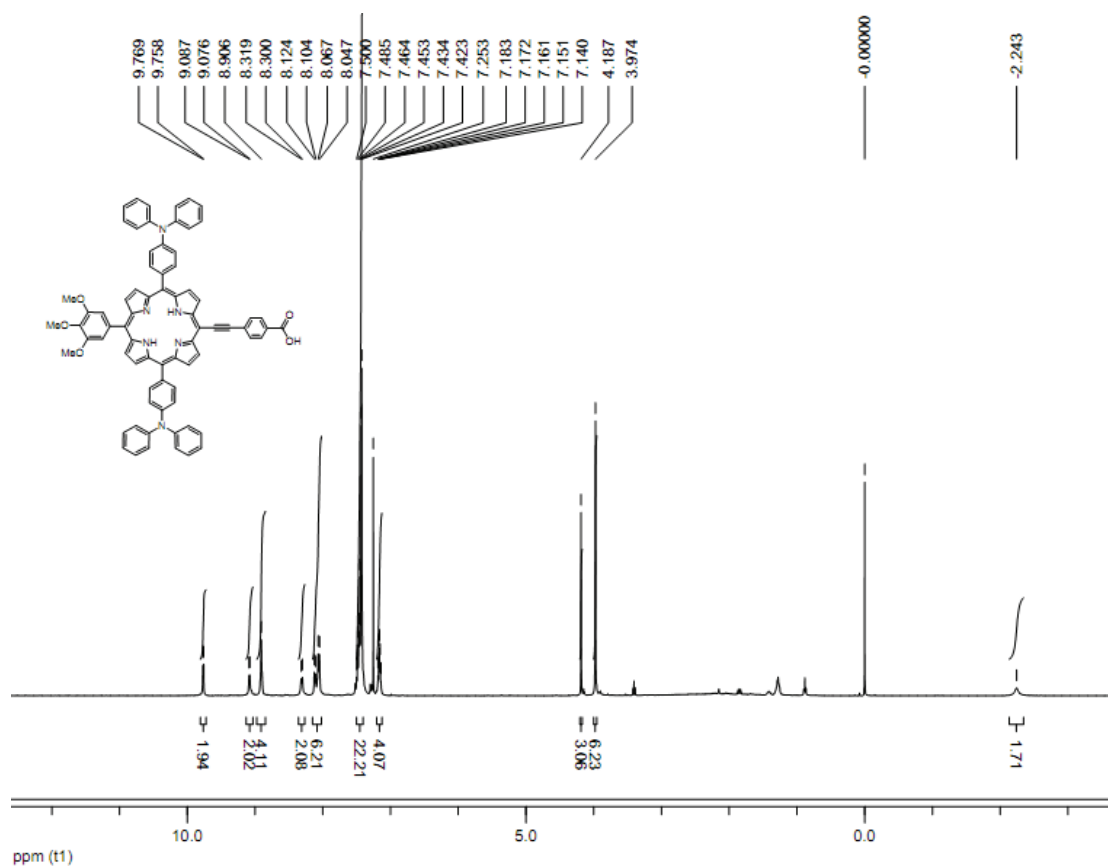


Fig. 47 The ¹H NMR spectrum of **4e** in CDCl₃

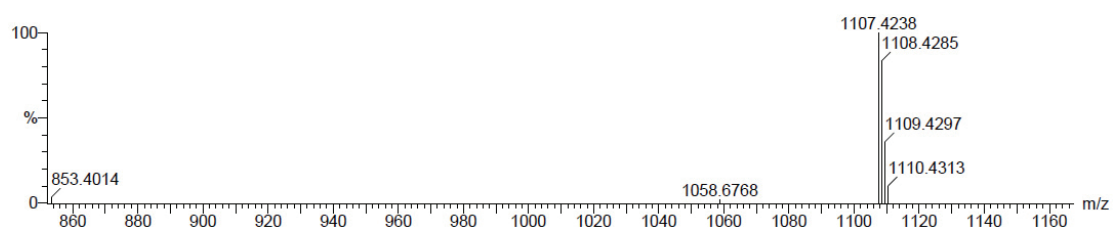


Fig. 48 HRMS of **4e** in MeOH

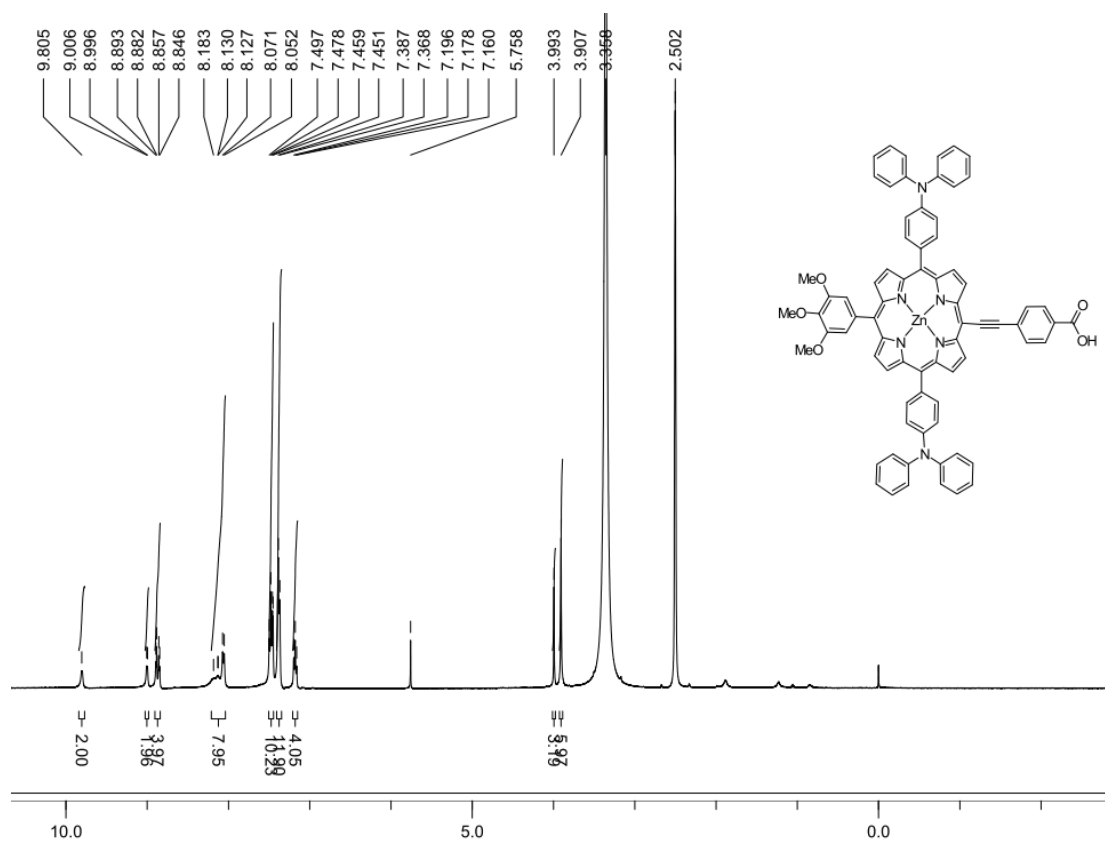


Fig. 49 The ^1H NMR spectrum of **M3T2P** in $\text{DMSO-}d_6$

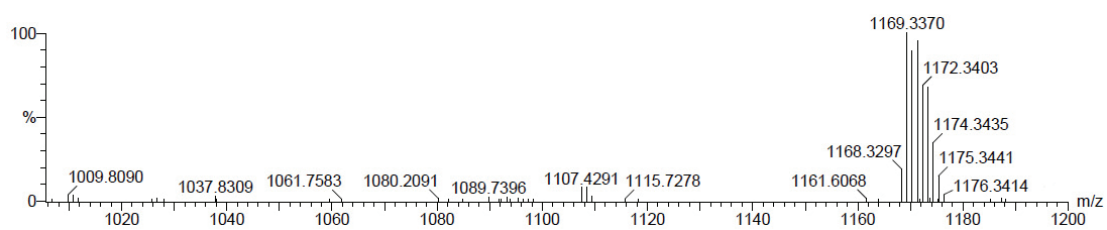


Fig. 50 HRMS of **M3T2P** in MeOH

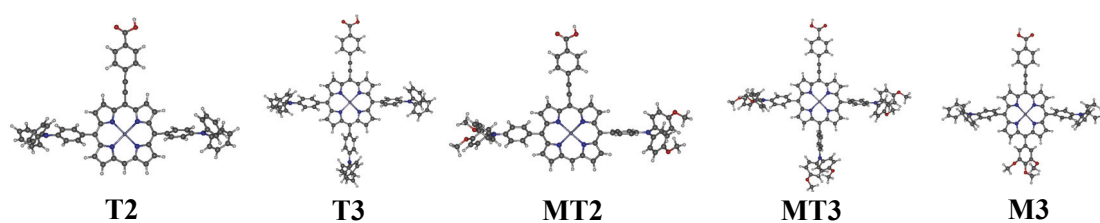


Fig. 51 The optimized structures of **T2P**, **T3P**, **MT2P**, **MT3P** and **M3T2P** dyes