

*Electronic Supplementary Information*

**The temperature-controllable photomechanical behavior of  $\alpha$ -isocyanostilbene derivative**

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## **1. General**

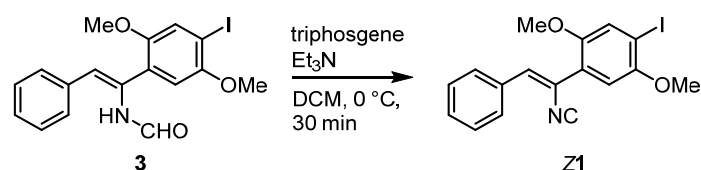
All commercially available reagents and solvents are of reagent grade and were used without further purification unless otherwise noted. Solvents for the synthesis were purchased from commercial suppliers, degassed by three freeze-pump-thaw cycles and further dried over molecular sieves (4 Å). Purification by column chromatography was performed with a silica gel 60N (spherical, neutral, 40–100 µm mesh, Kanto chemicals, Japan). NMR spectra were recorded on a JEOL ECA-600 spectrometer (<sup>1</sup>H: 600 MHz; <sup>13</sup>C: 151 MHz) using tetramethylsilane and CDCl<sub>3</sub> as internal standards, respectively. UV-vis absorption spectra were recorded on a JASCO V-750 spectrometer. The absorption spectra of the solid samples were recorded on a JASCO V-750 spectrophotometer equipped with JASCO ISV-922 integrating sphere. Emission spectra were recorded on a JASCO FP-8600 spectrometer. Luminescence microscopic spectra were recorded on a Photonic Hamamatsu PMA-12 Multichannel Analyzer (C14631-01). A cooling/heating stage on JHC 10002L was used for temperature changes of solid samples. High resolution mass spectra were recorded on a Thermo Scientific Exactive at the Center for analytical instrumentation at Chiba University. Photographs were obtained using Olympus BX53, SZX10, or Leica M205c microscopes with Sony α7S, Olympus DP74, or Leica Flexacam C3 digital cameras, respectively. Differential scanning calorimetry (DSC) measurements were recorded on a Shimadzu DSC60 instrument using Al<sub>2</sub>O<sub>3</sub> as a reference material. SEM images were recorded on a JEOL JCM-7000 instrument.

***Single crystal X-ray diffraction analyses:*** A suitable crystal was mounted with Paratone oil on a MiTeGen MicroMounts and transferred to the Four-circle Kappa Geometry Goniometer of a RIGAKU XtaLAB Synergy-S or R/Si system with 1.2 kW PhotonJet-S microfocus rotating anode using graphite monochromated Cu-Kα radiation and HyPix-6000HE detector. Cell parameters were determined and refined, and raw frame data were integrated using CrysAlis<sup>Pro</sup> (Rigaku Oxford Diffraction). The structures were solved by dual-space methods with (SHELXT)<sup>[S1]</sup> and refined by full-matrix least-squares techniques against  $F^2$  (SHELXL-2018/3)<sup>[S2]</sup> by using Olex2 software package.<sup>[S3]</sup> The intensities were corrected for Lorentz and polarization effects. The non-hydrogen atoms were refined anisotropically. Hydrogen atoms were placed using AFIX instructions.



$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ,  $\delta$ ): 3.80 (s, 3H), 3.89 (s, 3H), 5.87 (s, 1H), 6.88 (s, 1H), 7.27–7.30 (m, 1H), 7.33 (s, 1H), 7.37–7.42 (m, 4H), 7.55, 7.56 (s, 1H, two sets of *HN* signals of amide rotamers), 8.06, 8.08 (s, 1H, two sets of *CHO* signals of amide rotamers).  $^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ ,  $\delta$ ): 56.4 ( $\text{CH}_3$ ), 57.2 ( $\text{CH}_3$ ), 87.3 (C), 113.5 (CH), 115.2 (CH), 122.4 (CH), 123.4 (CH), 125.7 (C), 127.6 (CH), 128.6 (CH), 129.2 (CH), 132.9 (C), 134.7 (C), 151.2 (C), 153.0 (C), 158.8 (C), 163.0 (CH). MS-ESI (*m/z*):  $[\text{M}+\text{H}]^+$  calcd for  $\text{C}_{17}\text{H}_{17}\text{O}_3\text{NI}$ , 410.0248; found, 410.0240.

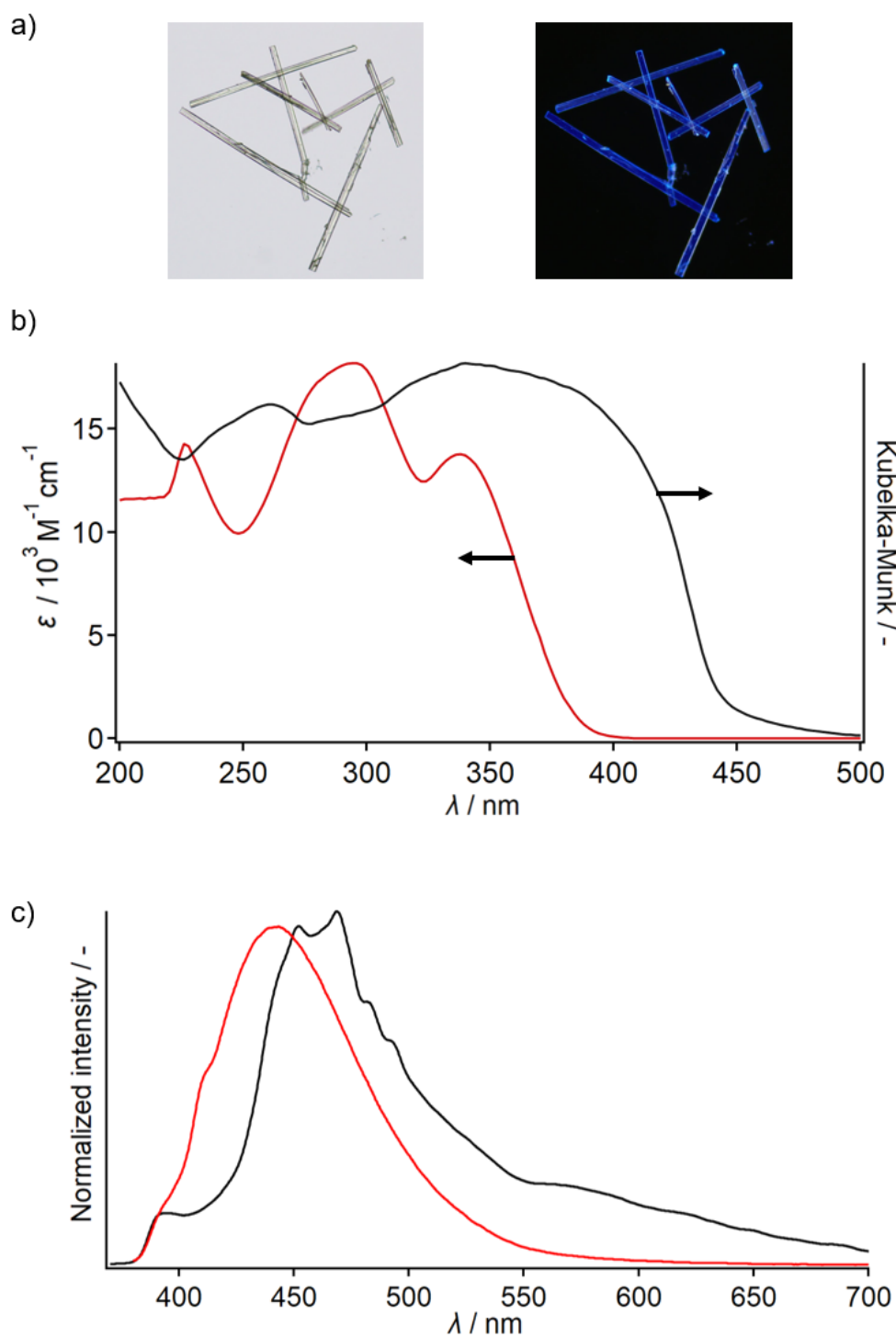
### Synthesis of Z1



An oven-dried two-neck flask was connected to a vacuum/nitrogen manifold through a rubber tube. It was evacuated and then backfilled with nitrogen. This cycle was repeated three times. To this flask, **3** (49.1 mg, 0.12 mmol), triethylamine (18.3 mg, 0.18 mmol) were added and dissolved in dichloromethane (3.0 mL). Then, triphosgene (17.8 mg,  $6.0 \times 10^{-2}$  mmol) was added and stirred at 0 °C for 30 min. After the reaction completion was monitored by TLC analysis, the reaction was quenched by the addition of ca. 20 mL of  $\text{H}_2\text{O}$ . The solution was extracted with dichloromethane and then washed with  $\text{H}_2\text{O}$ . The combined organic layers were dried over  $\text{MgSO}_4$  and then evaporated in vacuo. The residue was purified by column chromatography on silica gel (dichloromethane/*n*-hexane = 2:1) and obtained **Z1** as a yellow solid (24.3 mg,  $6.2 \times 10^{-2}$  mmol, 52%).

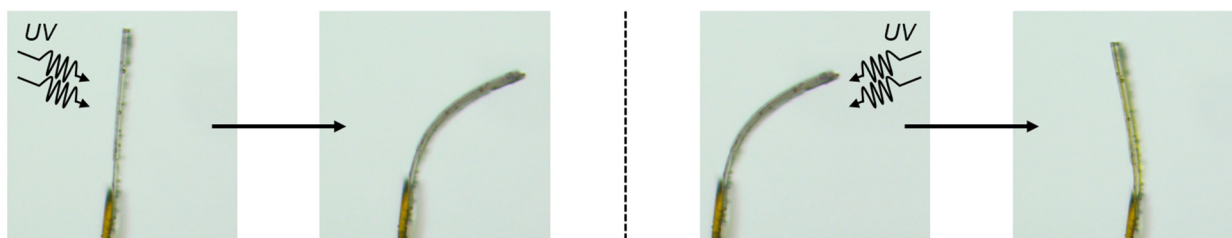
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ,  $\delta$ ): 3.87 (s, 3H), 3.90 (s, 3H), 7.01 (s, 1H), 7.13 (s, 1H), 7.38–7.40 (m, 2H), 7.45 (t,  $J = 7.2$  Hz, 2H), 7.77 (d,  $J = 7.8$  Hz, 2H).  $^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ ,  $\delta$ ): 56.7 ( $\text{CH}_3$ ), 57.2 ( $\text{CH}_3$ ), 87.1 (C), 111.5 (CH), 119.5 (C), 123.4 (CH), 124.1 (C), 128.8 (CH), 129.5 (CH), 129.6 (CH), 132.2 (CH), 133.5 (C), 151.4 (C), 152.8 (C), 168.6 (C). MS-ESI (*m/z*):  $[\text{M}+\text{Na}]^+$  calcd for  $\text{C}_{17}\text{H}_{14}\text{O}_2\text{NINa}$ , 413.9961; found, 413.9962.

### 3. Photophysical properties

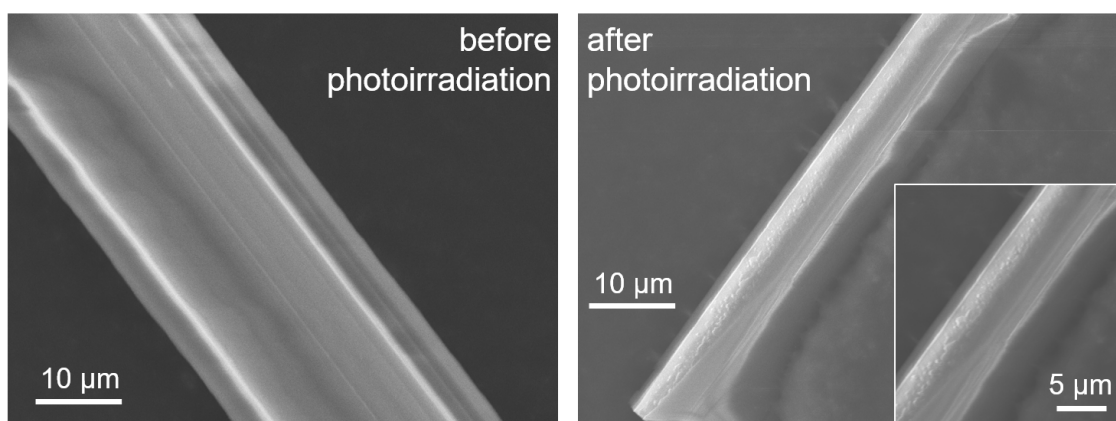


**Fig. S1** a) Photographs of the crystals of **Z1** taken under room light (left) and UV light (right). b) UV/vis absorption spectra of **Z1** in  $\text{CH}_2\text{Cl}_2$  ( $c = 10 \mu\text{M}$ , red line) and in the solid state (black line). c) Emission spectra of **Z1** in  $\text{CH}_2\text{Cl}_2$  ( $c = 10 \mu\text{M}$ , red line,  $\lambda_{\text{ex}} = 365 \text{ nm}$ ) and in the solid state (black line,  $\lambda_{\text{ex}} = 330 \text{ nm}$ ).

#### 4. Photomechanical behaviors and their temperature dependence

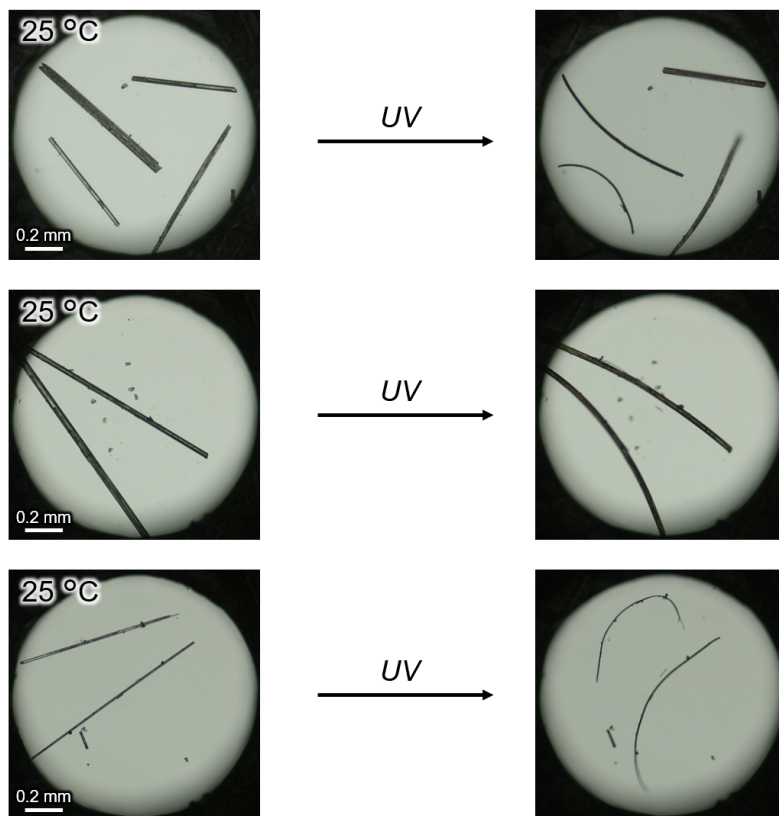


**Fig. S2** Photographs of the crystals of **Z1** upon photoirradiation by UV light.

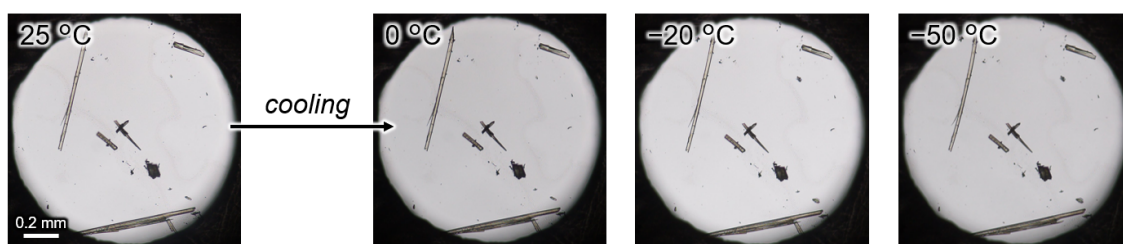


**Fig. S3** Changes in SEM images of **Z1** photoirradiation-induced bending at room temperature by UV light.

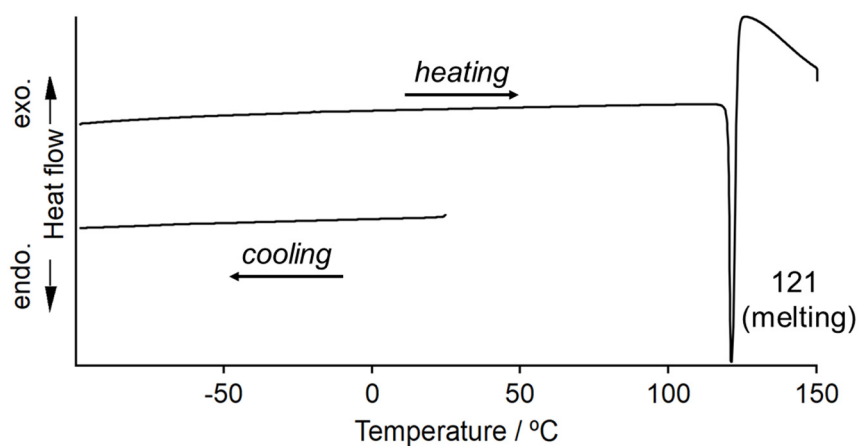
*Note:* Although the surface of the as-grown **Z1** crystal before irradiation is smooth, that after photoirradiation and bending exhibits multiple small rough features, indicating a clear decrease in surface smoothness. We attribute the increased surface roughness to the formation of photogenerated species (**2** and/or **E1**) within the ordered crystal lattice of **Z1**.



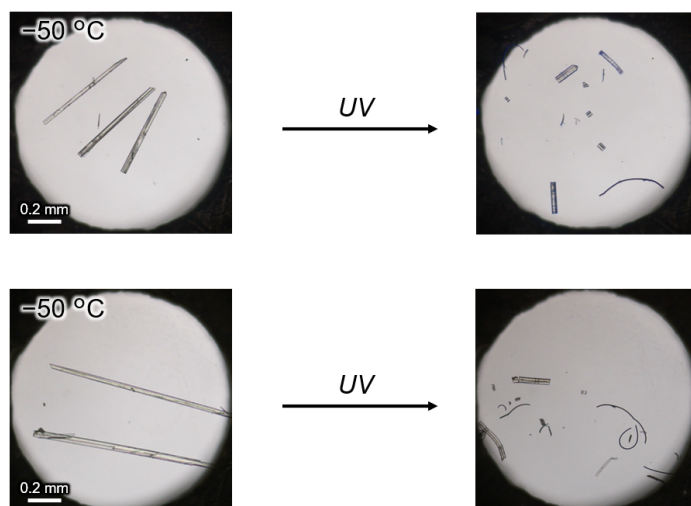
**Fig. S4** Photographs of the crystals of Z1 upon photoirradiation by UV light.



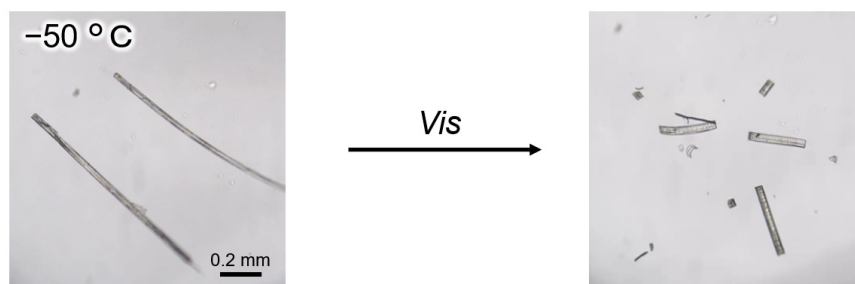
**Fig. S5** Photographs of the crystals of Z1 taken under room light upon cooling from 25 to  $-50$  °C.  
*Note:* No shape change occurred without UV light.



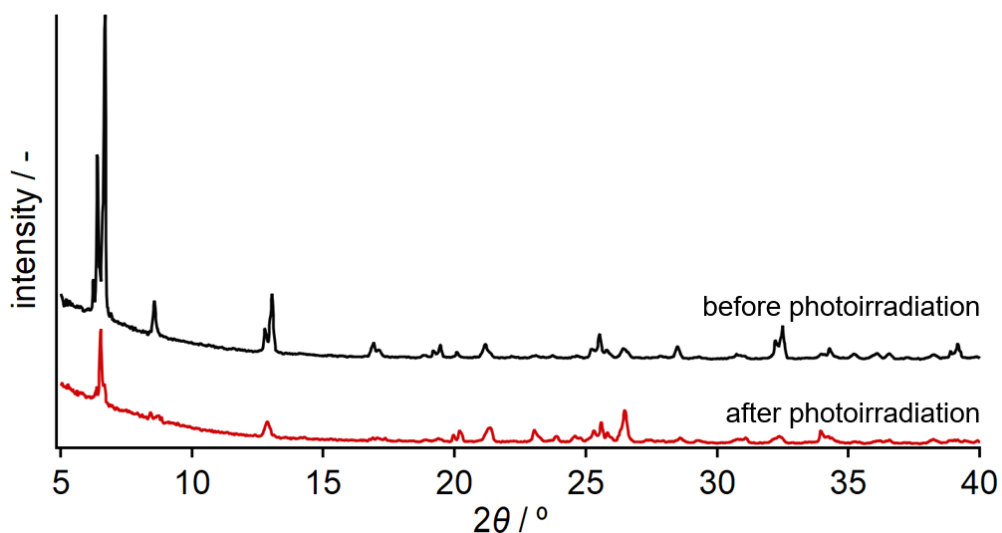
**Fig. S6** DSC traces of Z1 at the heating/cooling rate of 5.0 °C/min.



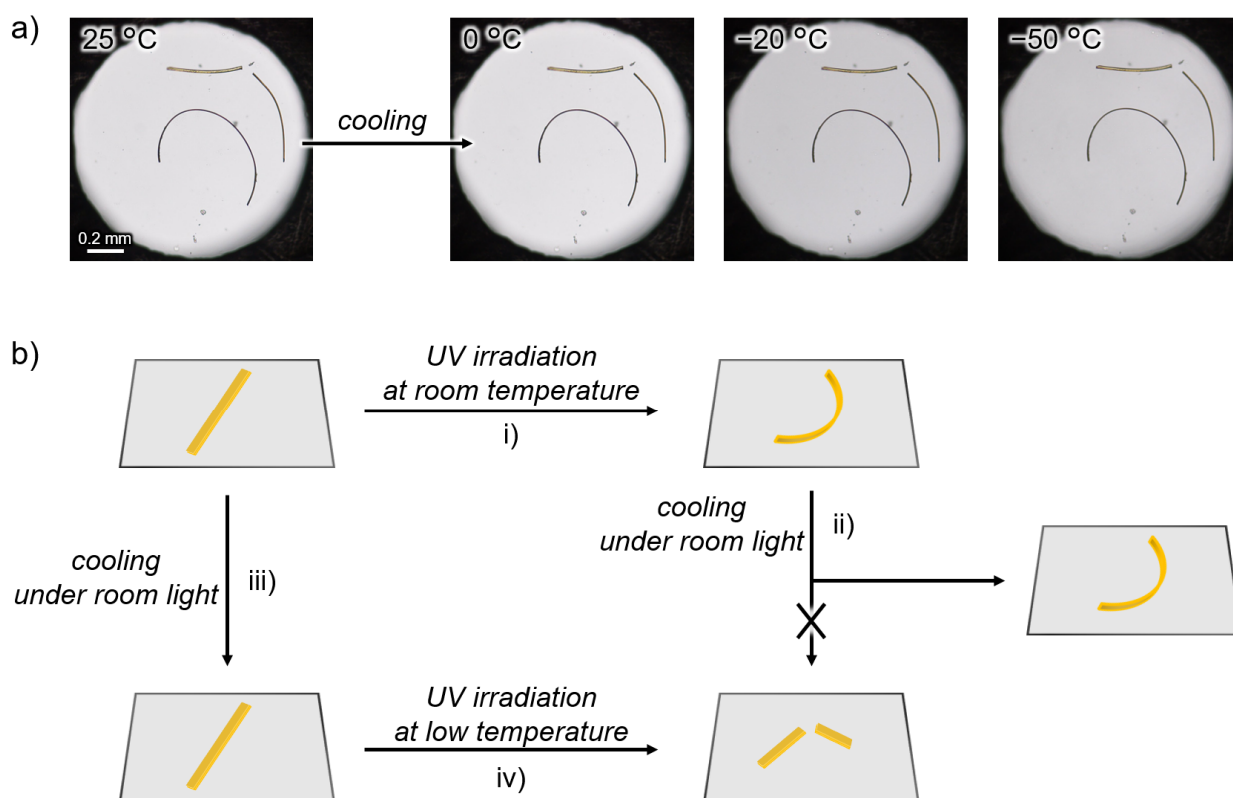
**Fig. S7** Photographs of the crystals of Z1 upon photoirradiation at  $-50\text{ }^{\circ}\text{C}$  (UV light).  
*Note:* All the crystals of Z1 were split.



**Fig. S8** Photographs of the crystals of Z1 upon visible-light irradiation by at  $-50\text{ }^{\circ}\text{C}$ .  
*Note:* All the crystals of Z1 were split, as observed under UV-light irradiation.

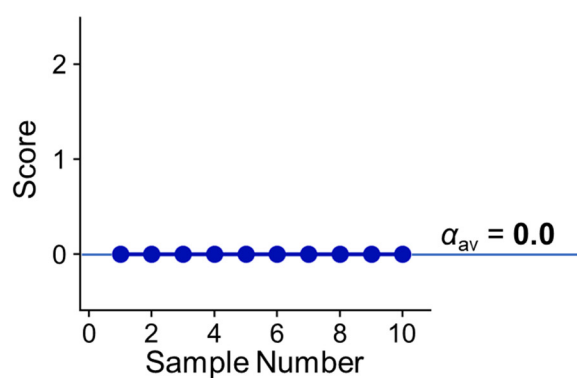


**Fig. S9** Changes in PXRD patterns of Z1 before and after photoirradiation by UV light at  $-50\text{ }^{\circ}\text{C}$  for 60 min.

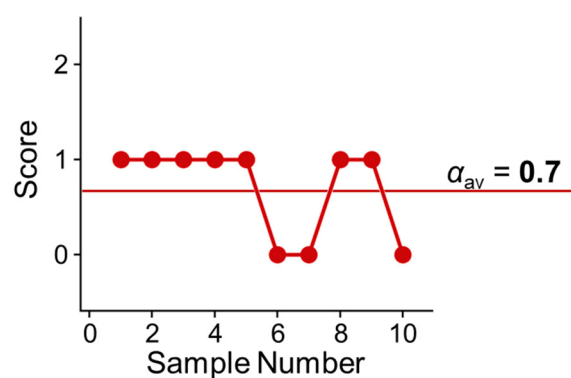


**Fig. S10** a) Photographs of the bent crystals, which were obtained by UV light illumination of Z1 at  $25\text{ }^{\circ}\text{C}$  (i in Fig. S10b), upon cooling under room light (ii in Fig. S10b), in which no shape change occurred. b) Schematic representation of the experiments in Fig. S10a (i and ii) and in Fig. 2c (iii and iv).

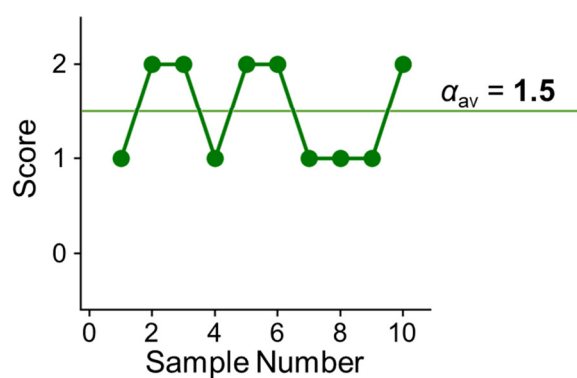
a) 0 °C ( $0 : 1 : 2 = 10 : 0 : 0$ )



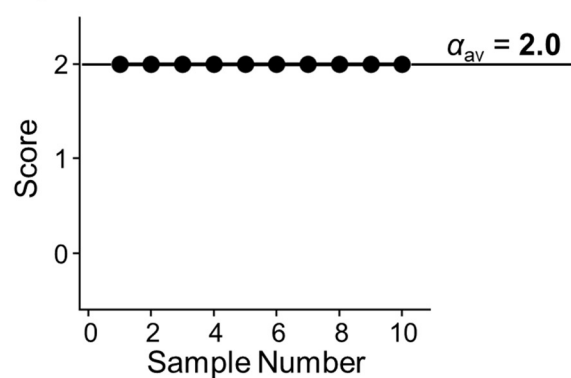
b) -20 °C ( $0 : 1 : 2 = 3 : 7 : 0$ )



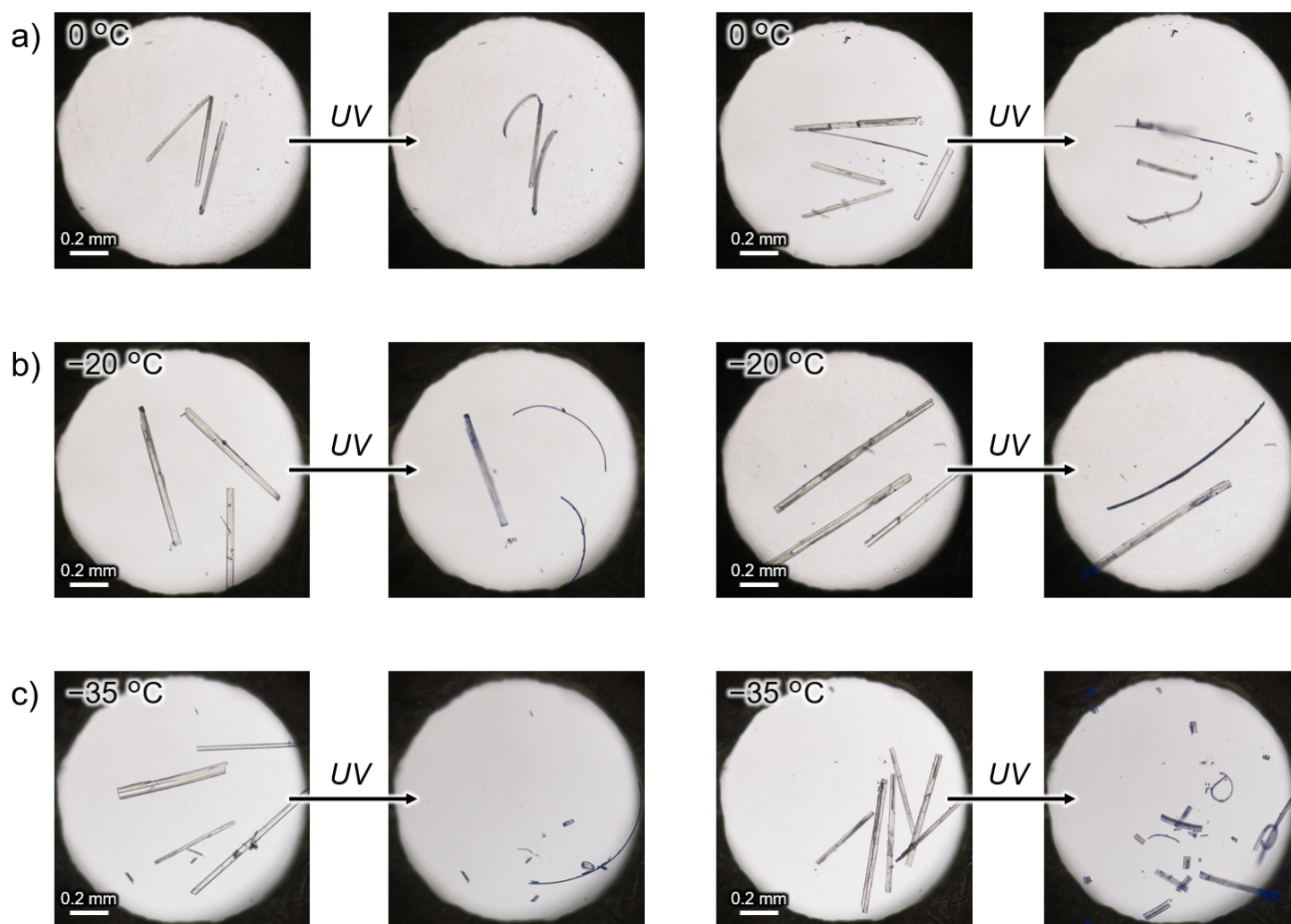
c) -35 °C ( $0 : 1 : 2 = 0 : 5 : 5$ )



d) -50 °C ( $0 : 1 : 2 = 0 : 0 : 10$ )

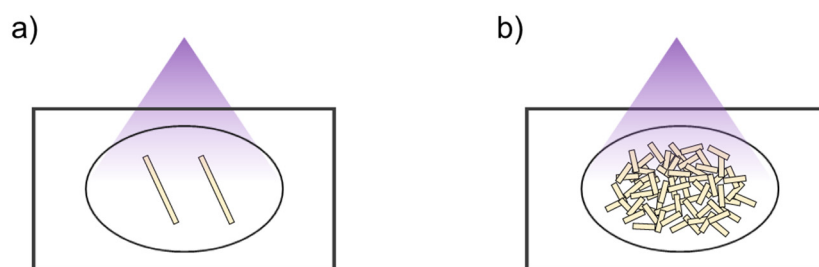


**Fig. S11** Plots of the score by using ten individual crystals of **Z1** at various temperatures.

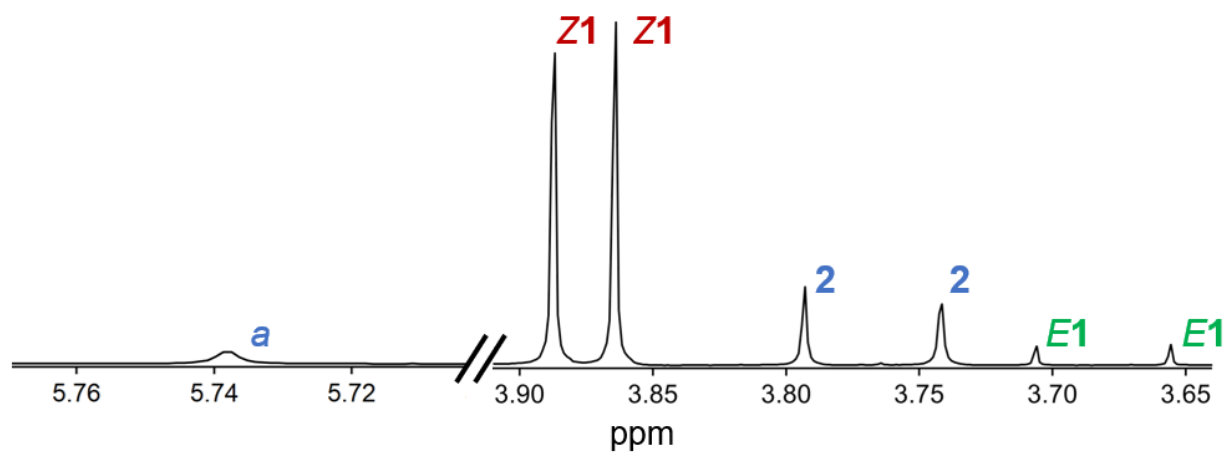
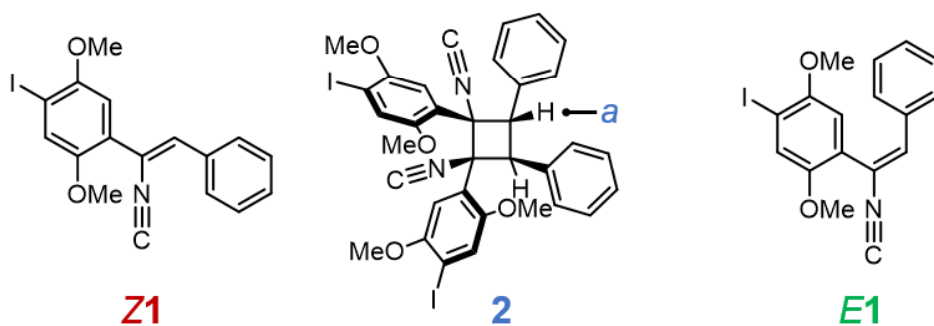
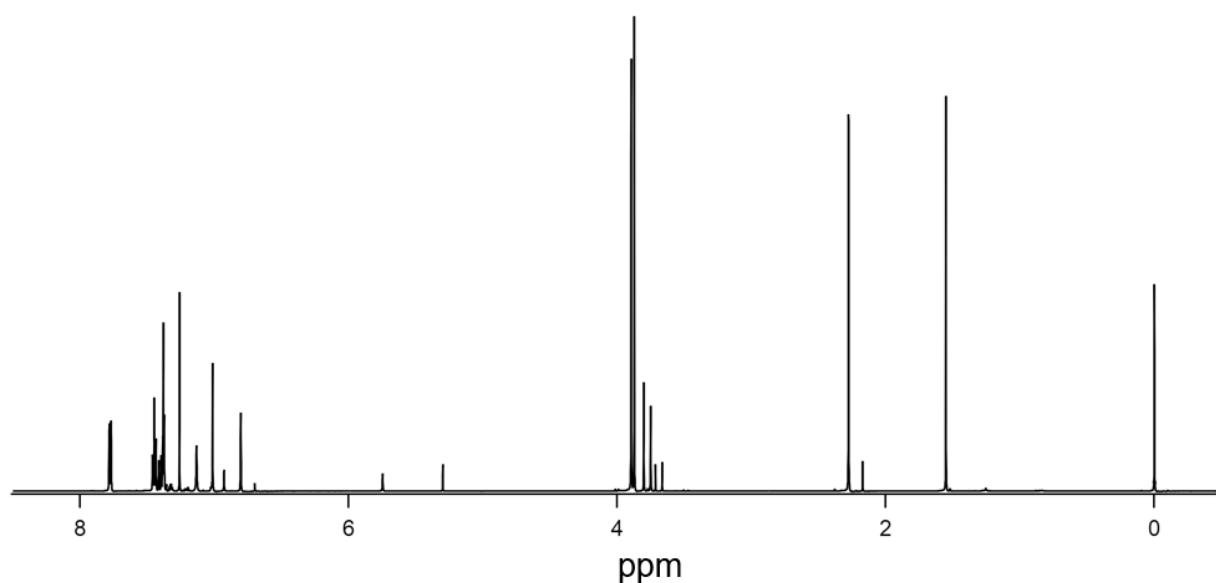


**Fig. S12** Photographs of the crystals of Z1 upon photoirradiation at various temperatures.

## 5. Analyses of photochemical reactions



**Fig. S13** Schematic representations of sample amounts of Z1 for a) observing the photomechanical effect and b) NMR measurements of the photoirradiated samples.



**Fig. S14** Entire (above) and selected (bottom) regions of  $^1\text{H}$  NMR spectrum of the samples, obtained by photoirradiation of **Z1** for 60 min at  $-50\text{ }^\circ\text{C}$ , in  $\text{CDCl}_3$ .

*Note:* Based on the previous works,<sup>[6,7]</sup> the observed signals of  $\delta = 3.75$ ,  $3.81$ , and  $5.75$  ppm can be ascribed to **2**<sup>[6]</sup> and those of  $\delta = 3.66$  and  $3.71$  ppm can be ascribed to **E1**.<sup>[7]</sup>

## 6. Crystal structure analyses

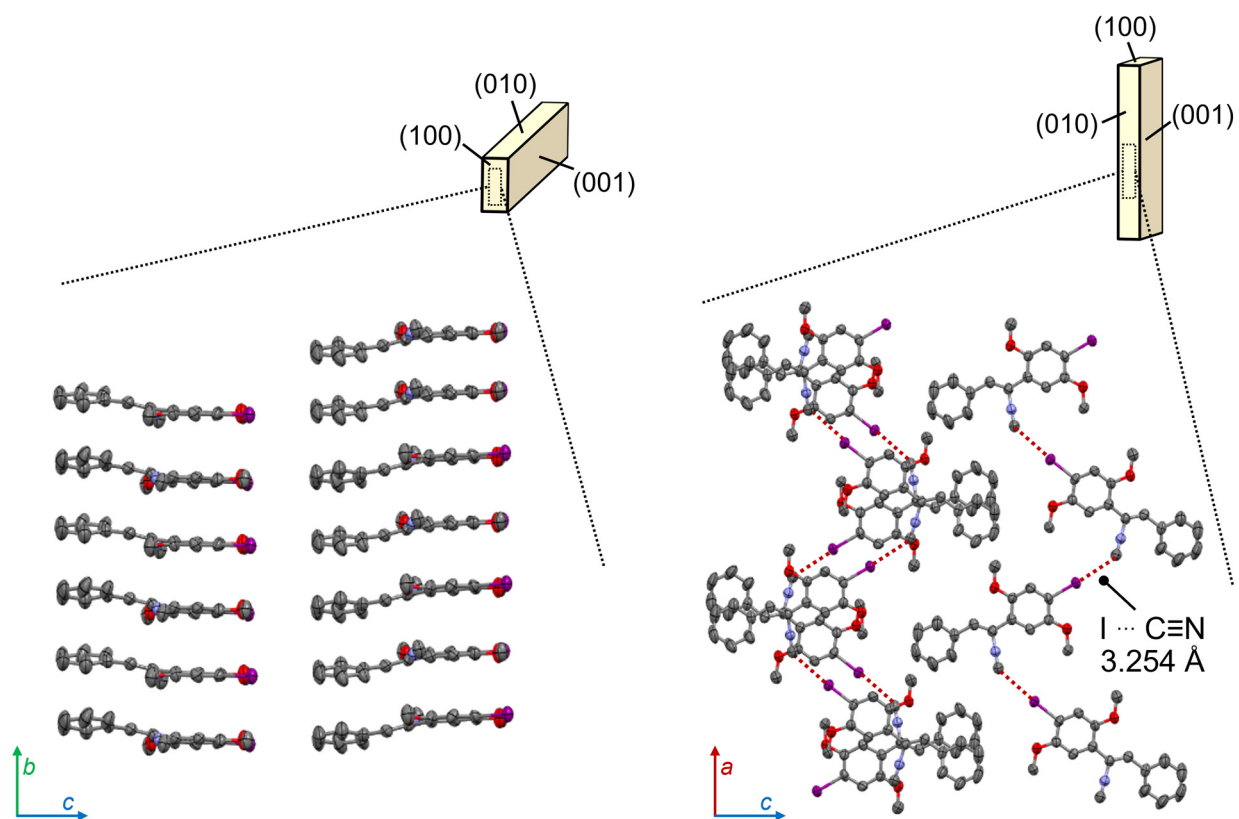


Fig. S15 Single-crystal structure of Z1 at 25 °C.

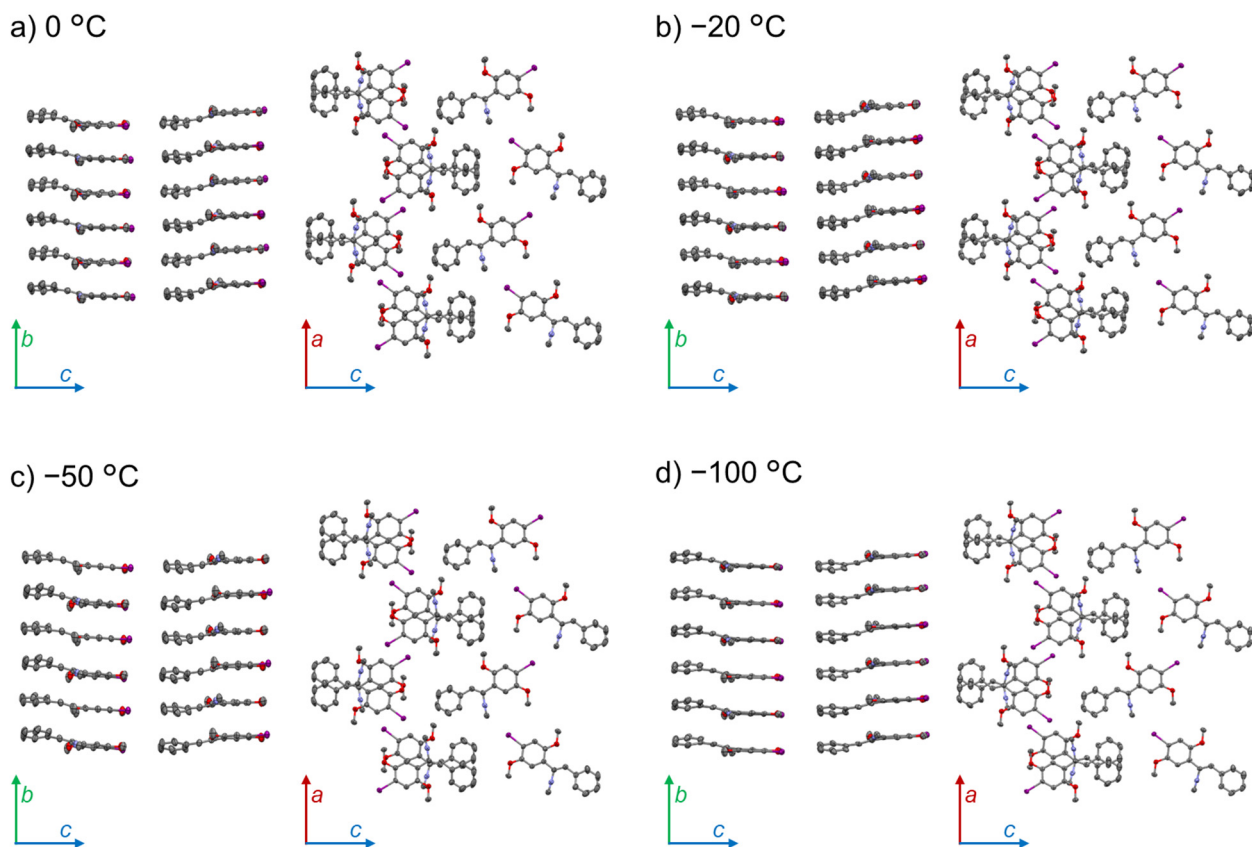
**Table S1.** Summary of X-ray crystallographic data.

| compound   | Z1 (25 °C)                                       | Z1 (0 °C)  | Z1 (-20 °C)                                      |
|--|--|--|--|
| CCDC Number  | 2525256  | 2525257  | 2525258  |
| Empirical Formula                                      | C <sub>17</sub> H <sub>14</sub> INO <sub>2</sub> | C <sub>17</sub> H <sub>14</sub> INO <sub>2</sub> | C <sub>17</sub> H <sub>14</sub> INO <sub>2</sub> |
| Formula Weight   | 391.19   | 391.19   | 391.19   |
| Crystal System   | orthorhombic                                     | orthorhombic                                     | orthorhombic                                     |
| Crystal Size / mm                                      | 0.41 × 0.03 × 0.02                               | 0.41 × 0.03 × 0.02                               | 0.41 × 0.03 × 0.02                               |
| <i>a</i> / Å   | 16.1022(4)                                       | 16.0841(4)                                       | 16.0875(5)                                       |
| <i>b</i> / Å   | 7.1059(2)  | 7.0891(2)  | 7.0639(3)  |
| <i>c</i> / Å   | 27.7748(7)                                       | 27.7472(5)                                       | 27.7232(9)                                       |
| <i>α</i> / °   | 90   | 90   | 90   |
| <i>β</i> / °   | 90   | 90   | 90   |
| <i>γ</i> / °   | 90   | 90   | 90   |
| <i>V</i> / Å <sup>3</sup>                              | 3178.01(16)                                      | 3163.79(13)                                      | 3150.48(19)                                      |
| Space Group  | <i>Pbca</i>                                      | <i>Pbca</i>                                      | <i>Pbca</i>                                      |
| <i>Z</i> / <i>Z'</i> values                            | 8 / 1  | 8 / 1  | 8 / 1  |
| <i>D</i> <sub>calc</sub> / g cm <sup>-3</sup>          | 1.635  | 1.643  | 1.649  |
| Temperature / K  | 298.03(18)                                       | 273.00(10)                                       | 253.00(10)                                       |
| 2 $\theta$ <sub>max</sub> / °                          | 136.428  | 136.482  | 136.428  |
| $\mu$ (Cu K $\alpha$ ) / mm <sup>-1</sup>              | 15.864   | 15.935   | 16.002   |
| No. of Reflections                                     | Total: 10521<br>Unique: 2895                     | Total: 9790<br>Unique: 2893                      | Total: 9808<br>Unique: 2864                      |
|  | <i>R</i> <sub>int</sub> = 0.0807                 | <i>R</i> <sub>int</sub> = 0.0667                 | <i>R</i> <sub>int</sub> = 0.0703                 |
| <i>R</i> <sub>1</sub> <sup>a</sup>                     | 0.0668   | 0.0651   | 0.0635   |
| <i>wR</i> <sub>2</sub> <sup>b</sup>                    | 0.1789   | 0.2083   | 0.1749   |
| GOF <sup>c</sup>                                       | 1.073  | 1.083  | 1.100  |
| Max./Mini. peak <i>I</i> <sup>d</sup> / Å <sup>3</sup> | 1.80/-1.15                                       | 2.29/-0.98                                       | 1.91/-0.97                                       |

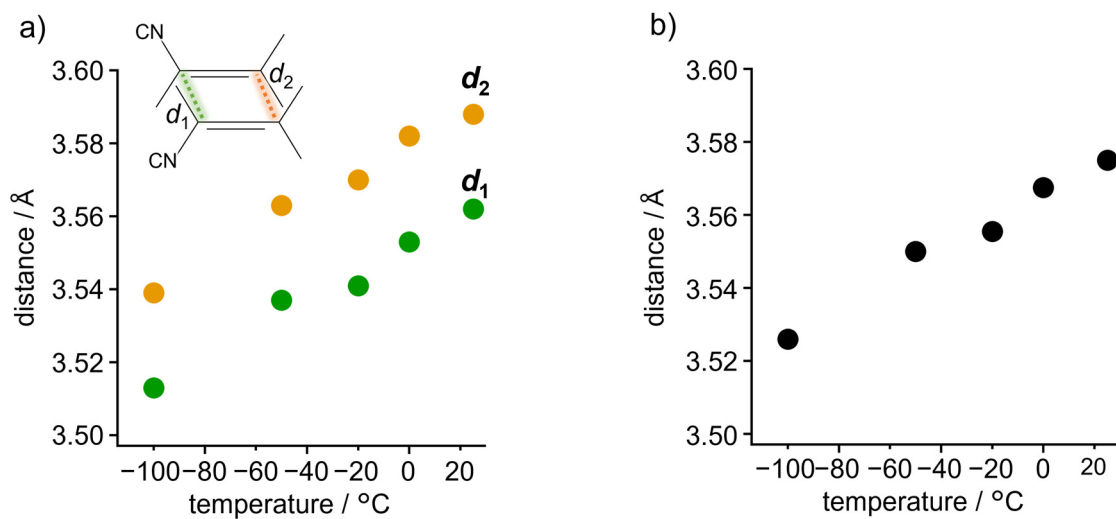
  

| compound   | Z1 (-50 °C)                                      | Z1 (-100 °C)                                     | 2  |
|--|--|--|--|
| CCDC Number  | 2525259  | 2525260  | 2525261  |
| Empirical Formula                                      | C <sub>17</sub> H <sub>14</sub> INO <sub>2</sub> | C <sub>17</sub> H <sub>14</sub> INO <sub>2</sub> | C <sub>34</sub> H <sub>28</sub> I <sub>2</sub> N <sub>2</sub> O <sub>4</sub> |
| Formula Weight   | 391.19   | 391.19   | 782.38   |
| Crystal System   | orthorhombic                                     | orthorhombic                                     | monoclinic   |
| Crystal Size / mm                                      | 0.41 × 0.03 × 0.02                               | 0.41 × 0.03 × 0.02                               | 0.28 × 0.16 × 0.03   |
| <i>a</i> / Å   | 16.1063(6)                                       | 16.0629(5)                                       | 11.2144(3)   |
| <i>b</i> / Å   | 7.0543(5)  | 7.0075(2)  | 14.0636(3)   |
| <i>c</i> / Å   | 27.6933(10)                                      | 27.6441(9)                                       | 19.9281(5)   |
| <i>α</i> / °   | 90   | 90   | 90   |
| <i>β</i> / °   | 90   | 90   | 97.398(2)  |
| <i>γ</i> / °   | 90   | 90   | 90   |
| <i>V</i> / Å <sup>3</sup>                              | 3146.5(3)  | 3111.65(17)                                      | 3116.79(13)  |
| Space Group  | <i>Pbca</i>                                      | <i>Pbca</i>                                      | <i>P2<sub>1</sub>/n</i>  |
| <i>Z</i> / <i>Z'</i> values                            | 8 / 1  | 8 / 1  | 4 / 1  |
| <i>D</i> <sub>calc</sub> / g cm <sup>-3</sup>          | 1.652  | 1.670  | 1.667  |
| Temperature / K  | 223.00(10)                                       | 173.02(10)                                       | 173.00(10)   |
| 2 $\theta$ <sub>max</sub> / °                          | 154.812  | 136.46   | 136.472  |
| $\mu$ (Cu K $\alpha$ ) / mm <sup>-1</sup>              | 16.023   | 16.202   | 16.175   |
| No. of Reflections                                     | Total: 10257<br>Unique: 3118                     | Total: 10322<br>Unique: 2834                     | Total: 20616<br>Unique: 5683   |
|  | <i>R</i> <sub>int</sub> = 0.0843                 | <i>R</i> <sub>int</sub> = 0.0692                 | <i>R</i> <sub>int</sub> = 0.0769   |
| <i>R</i> <sub>1</sub> <sup>a</sup>                     | 0.0805   | 0.0560   | 0.0545   |
| <i>wR</i> <sub>2</sub> <sup>b</sup>                    | 0.2185   | 0.1591   | 0.1549   |
| GOF <sup>c</sup>                                       | 1.082  | 1.052  | 1.011  |
| Max./Mini. peak <i>I</i> <sup>d</sup> / Å <sup>3</sup> | 2.26/-0.87                                       | 1.79/-1.45                                       | 2.06/-1.42   |

<sup>a</sup>:  $I > 2.00\sigma(I)$ . <sup>b</sup>: All reflections. <sup>c</sup>: Goodness of Fit Indicator. <sup>d</sup>: in Final Diff. Map.



**Fig. S16** Single-crystal structure of **Z1** at various temperatures.



**Fig. S17** a) Plots of two intercarbon distances ( $d_1$  and  $d_2$ ) within the neighboring molecules of **Z1** versus temperature. b) Plots of the average of  $d_1$  and  $d_2$  versus temperature.

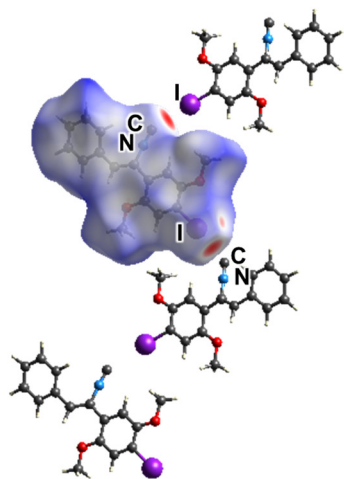


Fig. S18 Hirshfeld surfaces of Z1 mapped using  $d_{\text{norm}}$ .

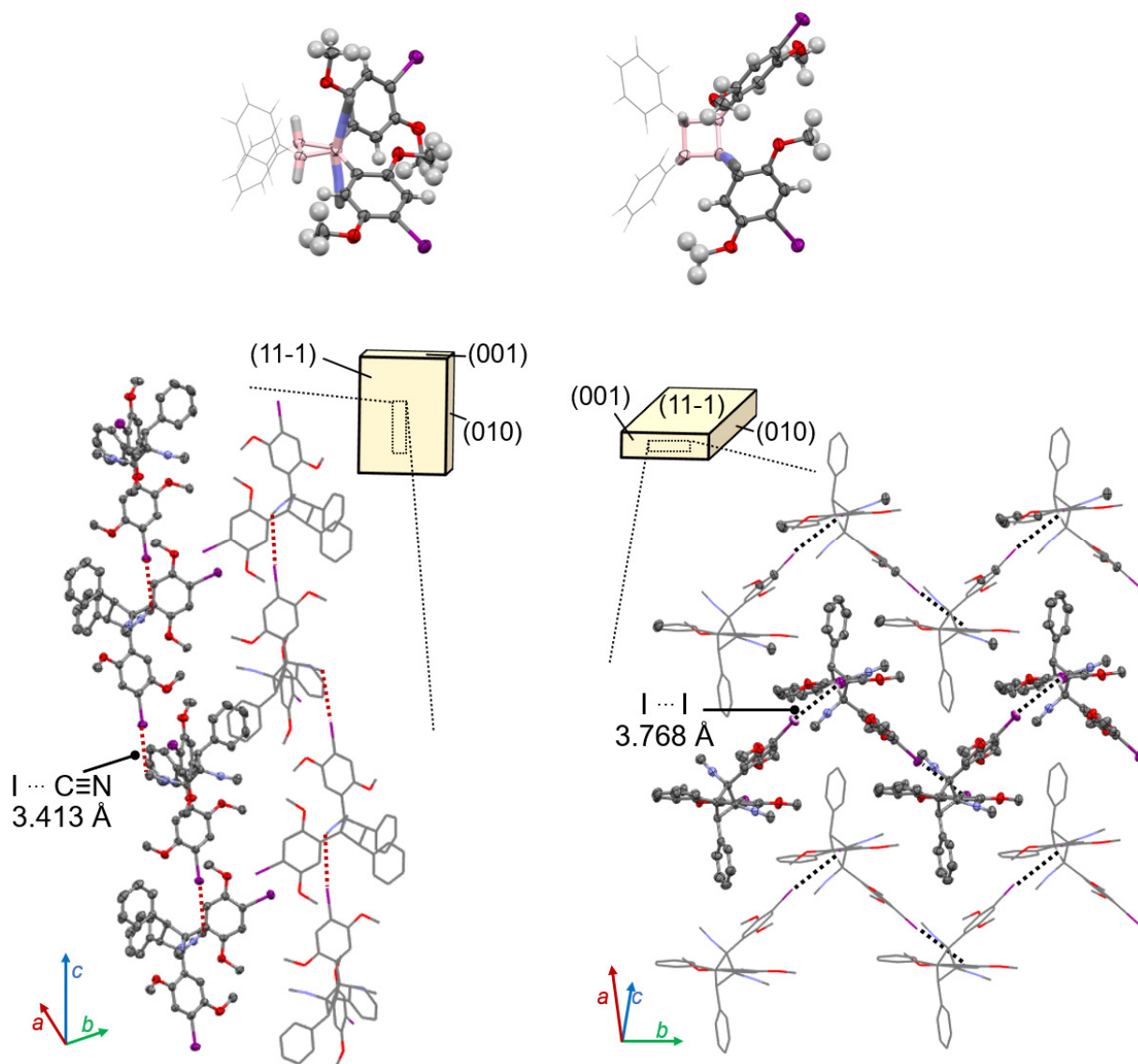
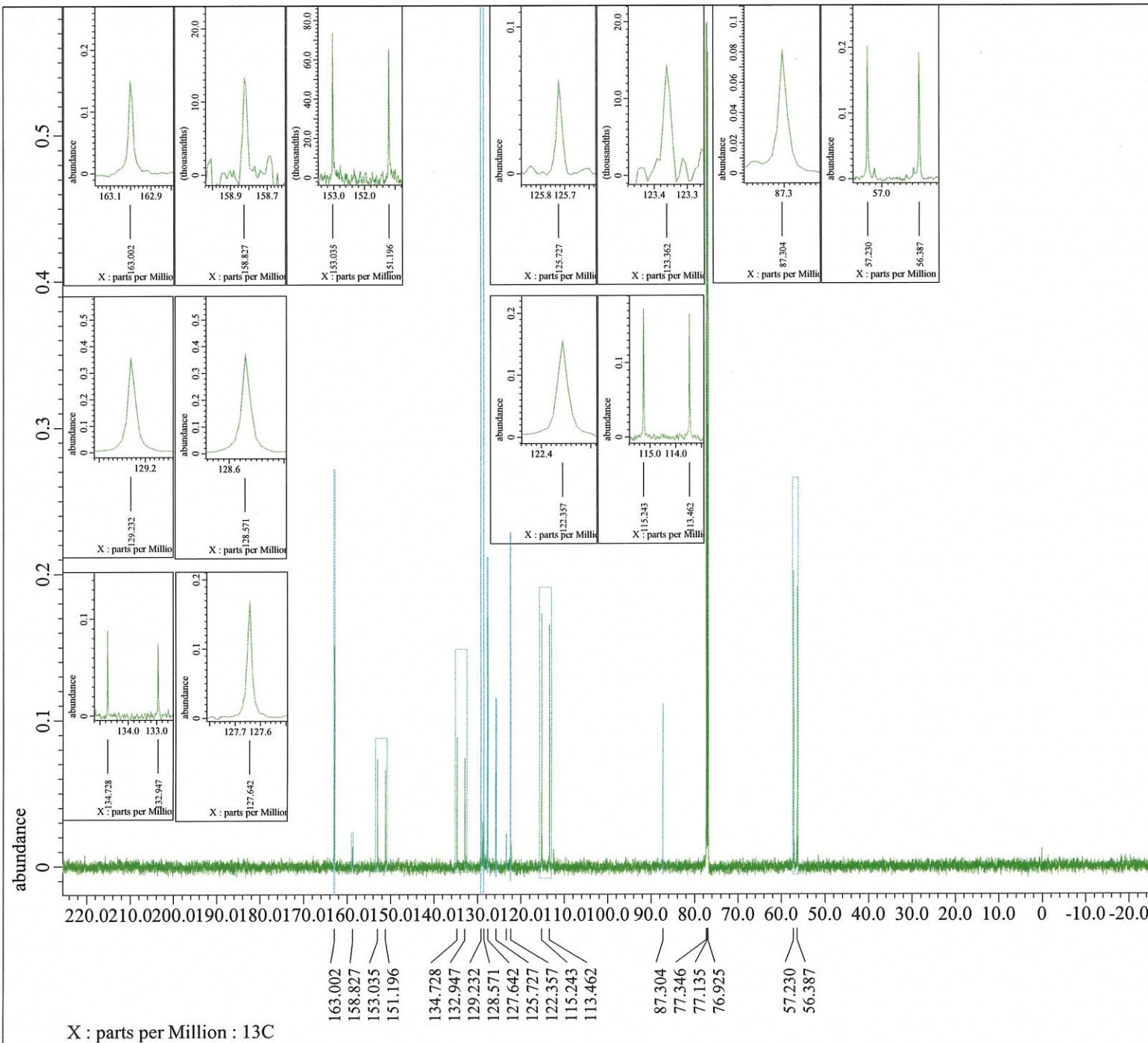


Fig. S19 Single-crystal structure of 2.

## **7. References**

- [S1] G. M. Sheldrick, SHTLXT - Integrated space-group and crystal-structure determination. *Acta Cryst.* **2015**, *A71*, 3–8.
- [S2] G. M. Sheldrick, Crystal structure refinement with SHELXL. *Acta Cryst.* **2015**, *C71*, 3–8.
- [S3] O. V. Dolomanov, L. J. Bourhis, R. J. Gildea, J. A. Howard, H. Puschmann, OLEX2: a complete structure solution, refinement and analysis program. *J. Appl. Crystallogr.* **2009**, *42*, 339–341.
- [S4] C. F. Macrae, I. Sovago, S. J. Cottrell, P. T. Galek, P. McCabe, E. Pidcock, M. Platings, G. P. Shields, J. S. Stevens, M. Towler, Mercury 4.0: from visualization to analysis, design and prediction. *J. Appl. Crystallogr.* **2020**, *53*, 226–235.
- [S5] Synthesis of *N*-(2-phenyl-1-tributylstannyl-vinyl)formamide: a) T. Yamaguchi, Y. Miyake, A. Miyamura, N. Ishiwata and K. Tatsuta, *J. Antibiot.*, **2006**, *59*, 729–734; b) K. Tatsuta and T. Yamaguchi, *Tetrahedron Letters*, **2005**, *46*, 5017–5020; c) R. Martin, C. Garcia, B. Munoz, A. Fondevila, V. Alvarez, WO Patent WO/2013/117789A2.
- [S6] a) J. Qi, L. Lan, Q. Chen, L. Li, P. Naumov and H. Zhang, *Angew. Chem. Int. Ed.*, **2025**, *64*, e202417409; b) J. Lin, S. Tang, L. Li, L. Fang, Q. Zeng, G. Sun, S. Wu, P. Naumov and J. Gong, *J. Am. Chem. Soc.*, **2025**, *147*, 11346–11358; c) J. Lin, J. Zhou, L. Li, I. Tahir, S. Wu, P. Naumov and J. Gong, *Chem. Mater.*, **2024**, *36*, 8338–8348.
- [S7] a) A. F. Palermo, B. S. Y. Chiu, P. Patel and S. A. L. Rousseaux, *J. Am. Chem. Soc.*, **2023**, *145*, 24981–24989; b) J. W. Chung, S. J. Yoon, B. K. An and S. Y. Park, *J. Phys. Chem. C*, **2013**, *117*, 11285–11291.



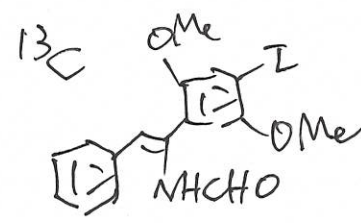


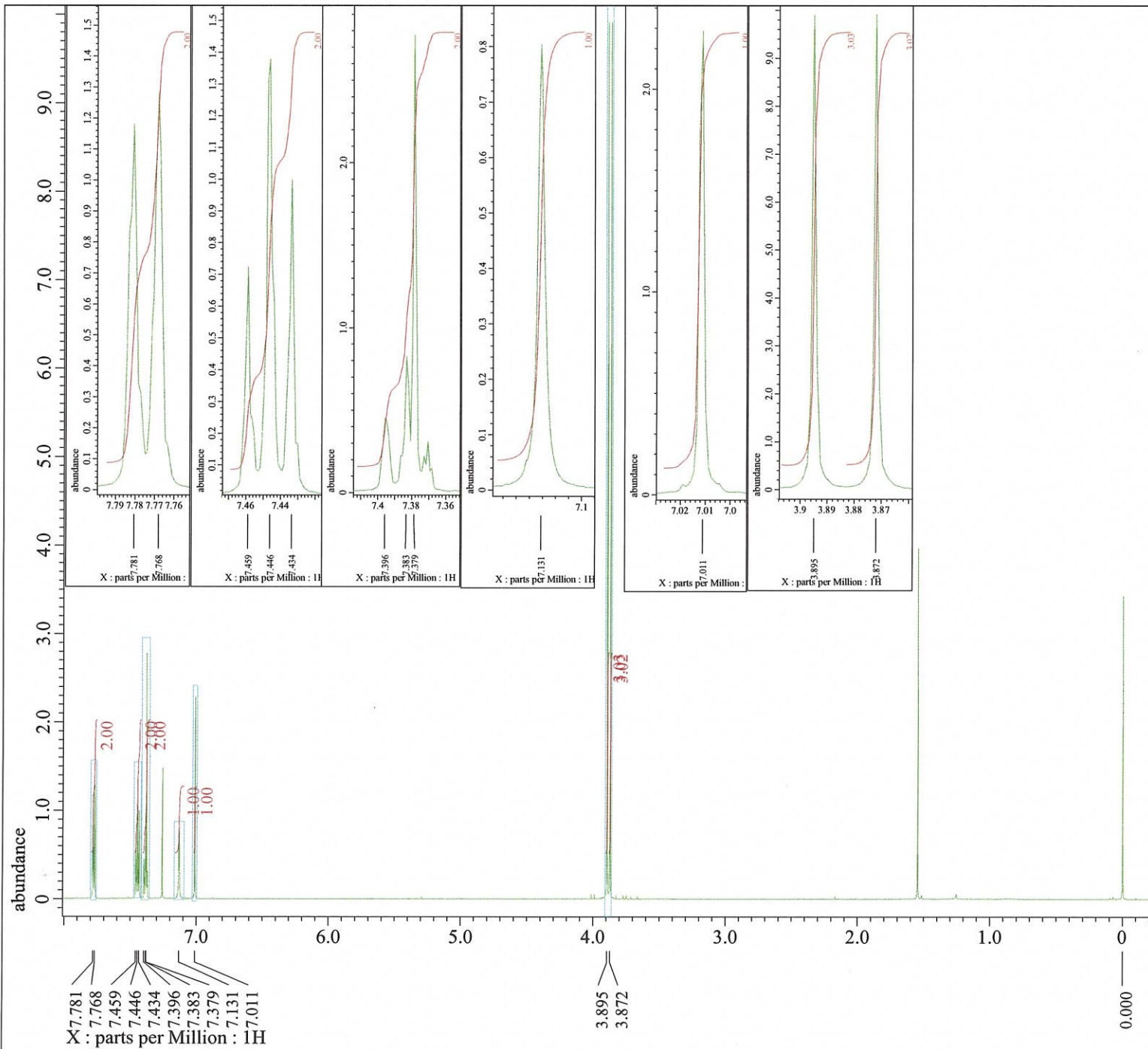
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Experiment = single\_pulse\_dec  
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Solvent = CHLOROFORM-D  
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Revision\_Time = 8-DEC-2025 16:02:30

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Data\_Format = 1D\_COMPLEX  
Dim\_Size = 26214  
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Dim\_Title = 13C  
Dim\_Units = [ppm]  
Dimensions = X  
Site = ECA 600  
Spectrometer = DELTA2\_NMR

Field\_Strength = 14.09636928 [T] (600 [MHz])  
X\_Acq\_Duration = 0.69206016 [s]  
X\_Domain = 13C  
X\_Freq = 150.91343039 [MHz]  
X\_Offset = 100 [ppm]  
X\_Points = 32768  
X\_Prescans = 4  
X\_Resolution = 1.44496109 [Hz]  
X\_Sweep = 47.34848485 [kHz]  
Irr\_Domain = 1H  
Irr\_Freq = 600.1723046 [MHz]  
Irr\_Offset = 5 [ppm]  
Clipped = FALSE  
Scans = 256  
Total\_Scans = 256

Relaxation\_Delay = 2 [s]  
Recvr\_Gain = 50  
Temp\_Get = 24.3 [dC]  
X\_90\_Width = 14.8 [us]  
X\_Acq\_Time = 0.69206016 [s]  
X\_Angle = 30 [deg]  
X\_Atn = 7 [dB]  
X\_Pulse = 4.93333333 [us]  
Irr\_Atn\_Dec = 18.579 [dB]  
Irr\_Atn\_Noise = 18.579 [dB]  
Irr\_Noise = WALTZ  
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Initial\_Wait = 1 [s]  
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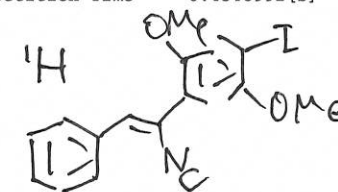


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Experiment = single\_pulse.ex2  
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Solvent = CHLOROFORM-D  
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Revision\_Time = 26-NOV-2025 12:01:13

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X\_Domain = 1H  
Dim\_Title = 1H  
Dim\_Units = [ppm]  
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Site = ECA 600  
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X\_Domain = 1H  
X\_Freq = 600.1723046 [MHz]  
X\_Offset = 5 [ppm]  
X\_Points = 16384  
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X\_Resolution = 0.68733284 [Hz]  
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Irr\_Domain = 1H  
Irr\_Freq = 600.1723046 [MHz]  
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Tri\_Offset = 5 [ppm]  
Clipped = FALSE  
Scans = 8  
Total\_Scans = 8

Relaxation\_Delay = 5 [s]  
Recvr\_Gain = 42  
Temp\_Get = 24.5 [dC]  
X\_90\_Width = 16 [us]  
X\_Acq\_Time = 1.4548992 [s]  
X\_Angle = 45 [deg]  
X\_Atn = 5.6 [dB]  
X\_Pulse = 8 [us]  
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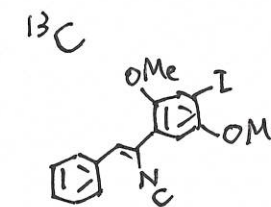
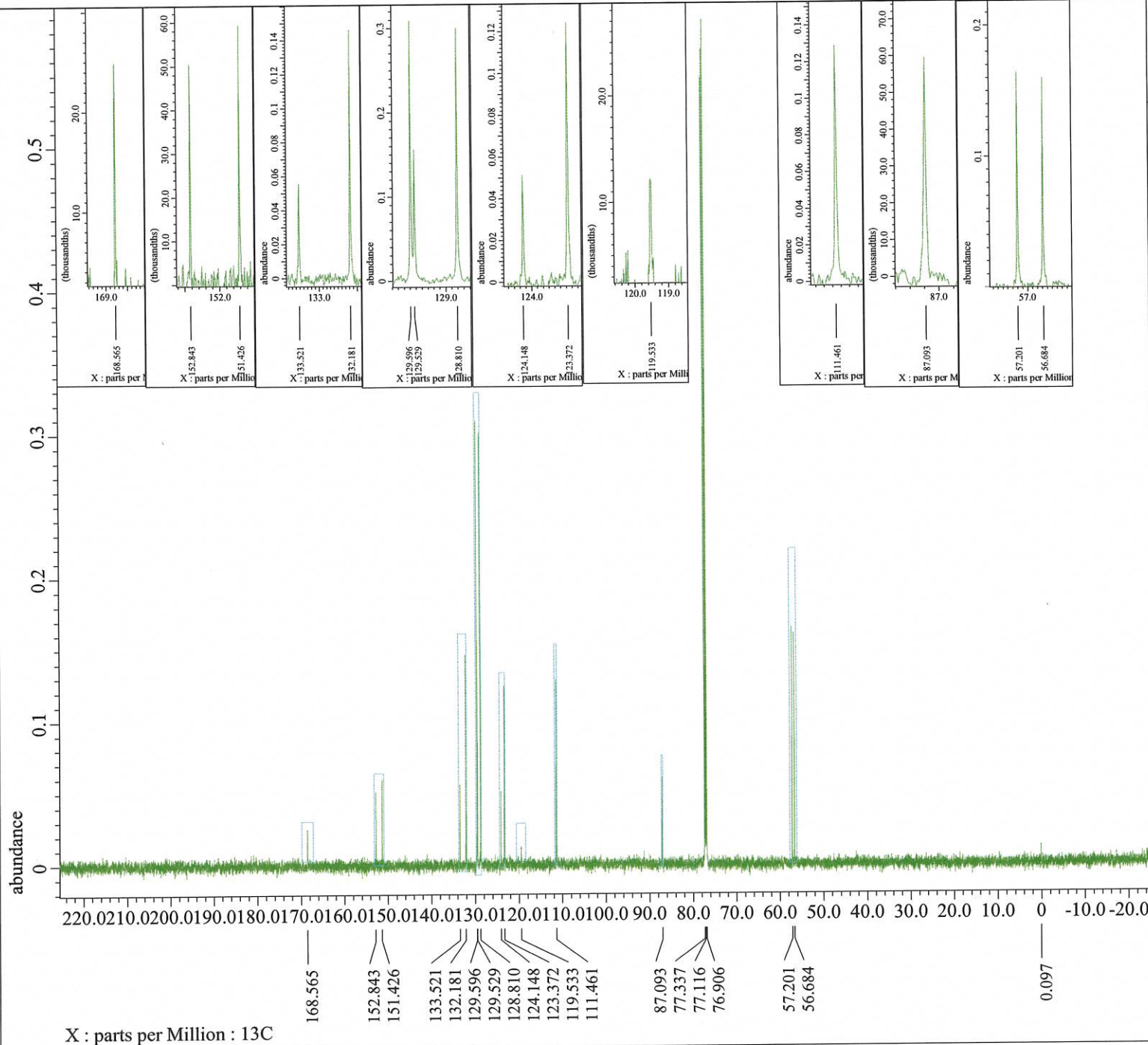


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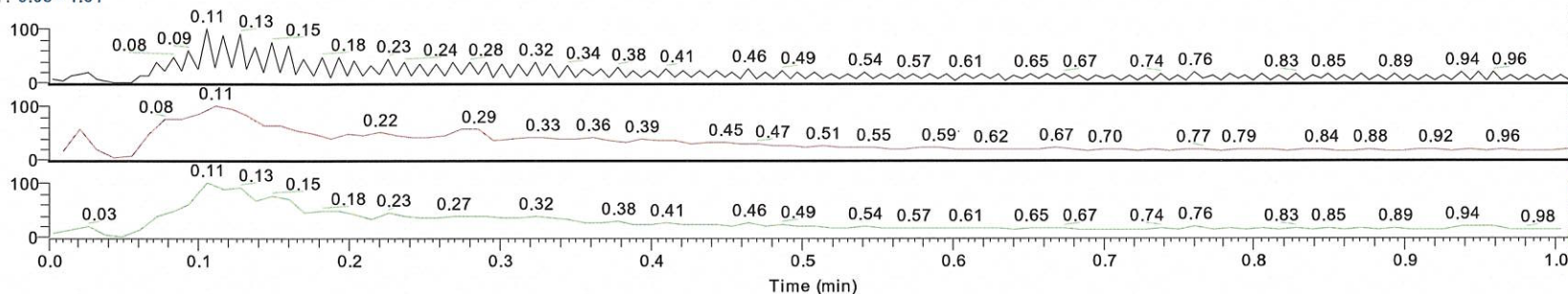
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X\_Domain = 13C  
X\_Freq = 150.91343039 [MHz]  
X\_Offset = 100 [ppm]  
X\_Points = 32768  
X\_Prescans = 4  
X\_Resolution = 1.44496109 [Hz]  
X\_Sweep = 47.34848485 [kHz]  
Irr\_Domain = 1H  
Irr\_Freq = 600.1723046 [MHz]  
Irr\_Offset = 5 [ppm]  
Clipped = FALSE  
Scans = 256  
Total\_Scans = 256

Relaxation\_Delay = 2 [s]  
Recvr\_Gain = 50  
Temp\_Get = 23.7 [dC]  
X\_90\_Width = 14.8 [us]  
X\_Acq\_Time = 0.69206016 [s]  
X\_Angle = 30 [deg]  
X\_Atn = 7 [dB]  
X\_Pulse = 4.93333333 [us]  
Irr\_Atn\_Dec = 18.579 [dB]  
Irr\_Atn\_No = 18.579 [dB]  
Irr\_Noise = WALTZ  
Decoupling = TRUE  
Initial\_Wait = 1 [s]  
Noe = TRUE  
Noe\_Time = 2 [s]  
Repetition\_Time = 2.69206016 [s]



X : parts per Million : 13C

RT: 0.00 - 1.01

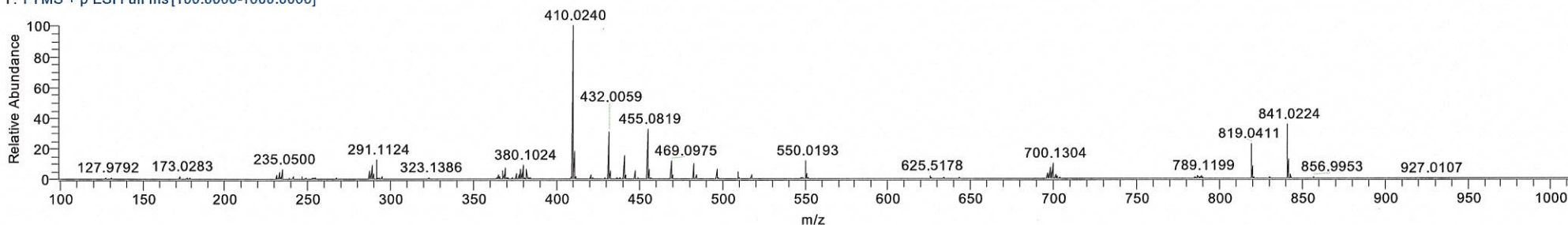


NL: 1.32E9  
TIC MS 260123\_seki\_01

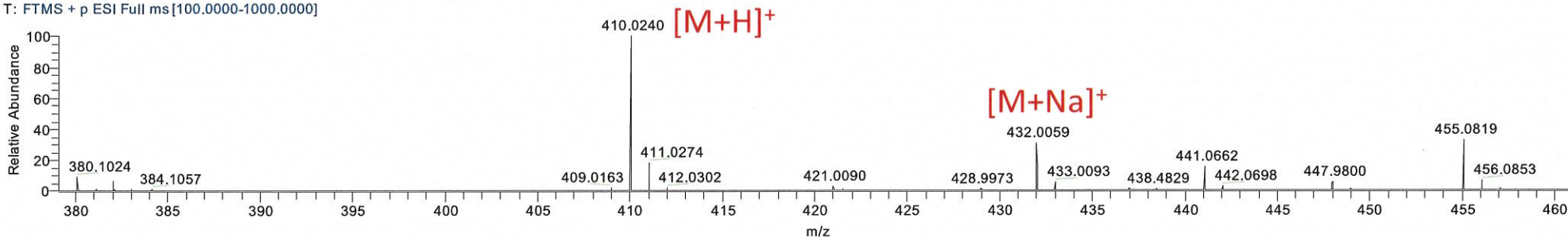
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[100.0000-1000.0000] MS  
260123\_seki\_01

NL: 1.32E9  
TIC F: FTMS + p ESI Full ms  
[100.0000-1000.0000] MS  
260123\_seki\_01

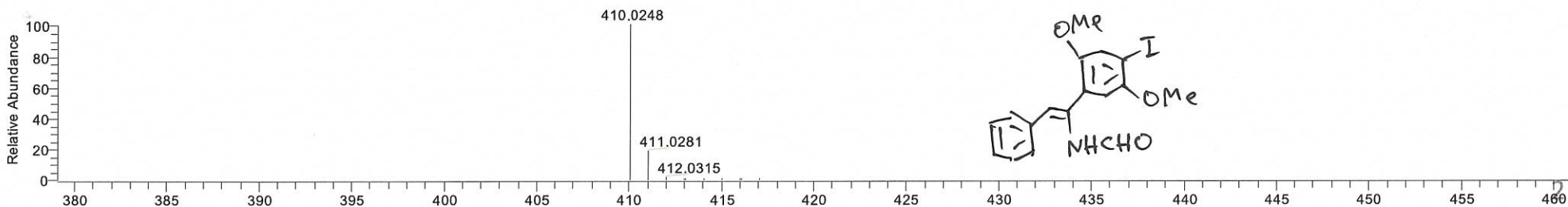
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T: FTMS + p ESI Full ms [100.0000-1000.0000]



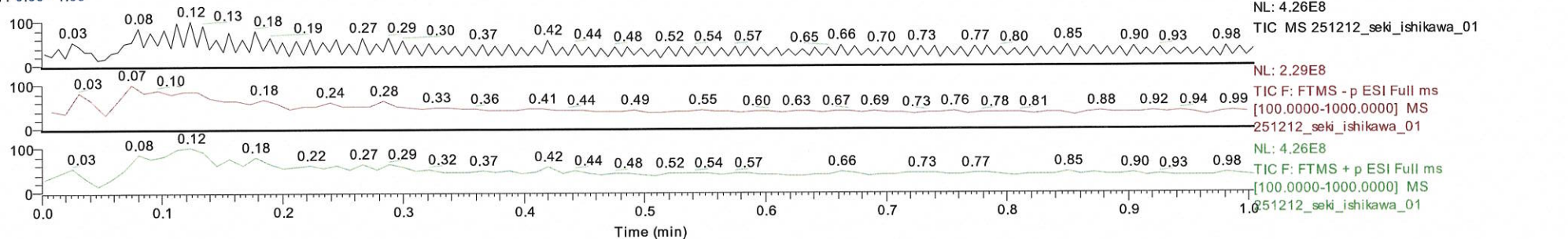
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C17 H17 O3 N1: C17 H17 O3 N1 I1 pa Chrg 1

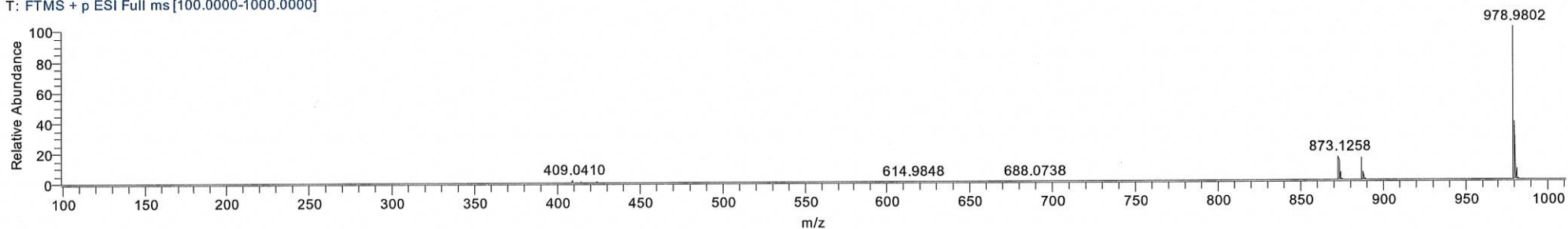


RT: 0.00 - 1.00



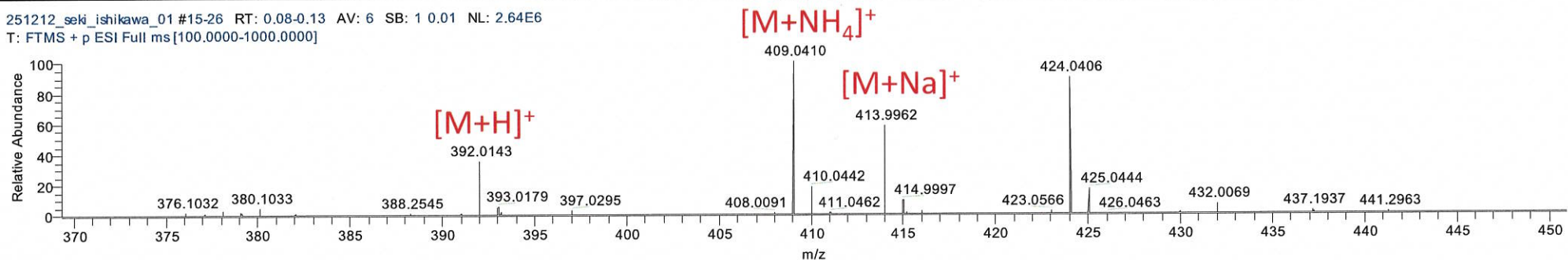
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251212\_seki\_ishikawa\_01 #15-26 RT: 0.08-0.13 AV: 6 SB: 1 0.01 NL: 2.64E6

T: FTMS + p ESI Full ms [100.0000-1000.0000]



C17 H14 O2 N1 Na: C17 H14 O2 N1 I1 Na1 pa Chrg 1

