

## 分子性導体単結晶の偏光スペクトルデータ集

**1. TTF-TCNQ**

- [1] 50-10,000  $\text{cm}^{-1}$ ; //b: 320, 300, 160, 70, 65, 53, 42, 35, 5 K; //a: 300 K; reflection.  
 [2] 10-700  $\text{cm}^{-1}$ ; //b: 300, 160, 60, 34, 25 K; reflection.  
 [3] 10-830  $\text{cm}^{-1}$ ; //b: 12 K; //a: 12 K; bolometric method.  
 [4] 8-30  $\text{cm}^{-1}$ ; //b: 300, 5 K; //a: 245, 60, 5 K; transmission.  
 [5] 15-900  $\text{cm}^{-1}$ ; //b: 85, 60, 40, 37, 1.2 K; reflection

**2. (TMTCF)<sub>2</sub>X**

- [6] (TMTSF)<sub>2</sub>PF<sub>6</sub>: 10-20,000  $\text{cm}^{-1}$ ; //a: 300, 100, 25 K; //b': 300, 100, 25 K; reflection.  
 [7] (TMTSF)<sub>2</sub>ClO<sub>4</sub>: 5,000-25,000  $\text{cm}^{-1}$ ; //a: 290, 230, 190, 145, 90, 30 K; //b: 290 K; reflection  
 [8] (TMTSF)<sub>2</sub>SbF<sub>6</sub>: (1) 5,000-27,000  $\text{cm}^{-1}$ ; //b' 300 K; //c\* 300 K; (2) 400-3,500  $\text{cm}^{-1}$ ; //b': 300, 30 K; reflection  
 (TMTSF)<sub>2</sub>AsF<sub>6</sub>: (1) 5,000-27,000  $\text{cm}^{-1}$ ; //a: 300, 100, 30 K; //b': 300, 100, 30 K; (2) 400-1400  $\text{cm}^{-1}$ ; //b': 30 K; //c\*: 30 K; reflection  
 (TMTSF)<sub>2</sub>PF<sub>6</sub>: (1) 5,000-27,000  $\text{cm}^{-1}$ ; //a: 300 K; //b': 300 K; (2) 10-1800  $\text{cm}^{-1}$ ; //b': 300, 25 K; //a: 300, 100, 25 K (3) 10-10,000  $\text{cm}^{-1}$ ; //a: 300 K; reflection  
 (TMTSF)<sub>2</sub>ClO<sub>4</sub>: 400-3,500  $\text{cm}^{-1}$ ; //b': 300, 30 K; reflection  
 (TMTSF)<sub>2</sub>ReO<sub>4</sub>: 400-10,000  $\text{cm}^{-1}$ ; //a: 300, 40 K; reflection  
 (TMTTF)<sub>2</sub>Br: 350-10,000  $\text{cm}^{-1}$ ; //a: 300 K; reflection  
 (TMTTF)<sub>2</sub>PF<sub>6</sub>: 350-10,000  $\text{cm}^{-1}$ ; //a: 300 K; reflection  
 [9] (TMTTF)<sub>2</sub>IO<sub>4</sub>: 720-25,000  $\text{cm}^{-1}$ ; //a: RT;  $\perp$ a: RT; reflection  
 (TMTTF)<sub>2</sub>BF<sub>4</sub>: 720-5000  $\text{cm}^{-1}$ ; //a: RT; reflection  
 [10] (TMTSF)<sub>2</sub>ClO<sub>4</sub>: 10-300  $\text{cm}^{-1}$ ; //a: 58, 30, 20, 2 K;  $\perp$ a: 2 K; reflection  
 (TMTSF)<sub>2</sub>AsF<sub>6</sub>: 10-500  $\text{cm}^{-1}$ ; //a: 30, 16, 14, 2 K;  $\perp$ a: 25, 2 K; reflection  
 (TMTSF)<sub>2</sub>SbF<sub>6</sub>: 10-500  $\text{cm}^{-1}$ ; //a: 19, 2 K;  $\perp$ a: 19, 2 K; reflection  
 [11] (TMTSF)<sub>2</sub>AsF<sub>6</sub>: 10-500  $\text{cm}^{-1}$ ; //a: 30, 25, 16, 14, 2 K;  $\wedge$ a: 30, 25, 2 K; reflection  
 [12] (TMTSF)<sub>2</sub>AsF<sub>6</sub>: 10-1000  $\text{cm}^{-1}$ ; //a: 6 K; //b': 6 K; bolometric method  
 (TMTSF)<sub>2</sub>SbF<sub>6</sub>: 10-1000  $\text{cm}^{-1}$ ; //a: 6 K; //b': 6 K; bolometric method  
 [13] (TMTSF)<sub>2</sub>AsF<sub>6</sub>: 10-300  $\text{cm}^{-1}$ ; //a: 30, 6 K; //b': 15, 7 K; reflection  
 [14] (TMTSF)<sub>2</sub>ReO<sub>4</sub>: 40-10,000  $\text{cm}^{-1}$ ; //a: 295, 25 K; //b': 295, 25 K; reflection  
 (TMTSF)<sub>2</sub>BF<sub>4</sub>: 40-10,000  $\text{cm}^{-1}$ ; //a: 295, 20 K; //b': 295, 20 K; reflection

- [15](TMTSF)<sub>2</sub>ClO<sub>4</sub>: 15-9,000 cm<sup>-1</sup>; //a: 300 K; reflection  
 (TMTSF)<sub>2</sub>PF<sub>6</sub>: 15-9,000 cm<sup>-1</sup>; //a: 300 K; reflection  
 (TMTSF)<sub>2</sub>BF<sub>4</sub>: 15-9,000 cm<sup>-1</sup>; //a: 300 K; reflection  
 (TMTSF)<sub>2</sub>ReO<sub>4</sub>: 15-9,000 cm<sup>-1</sup>; //a: 300 K; reflection  
 (TMTTF)<sub>2</sub>Br: 15-9,000 cm<sup>-1</sup>; //a: 300 K; reflection  
 (TMTTF)<sub>2</sub>PF<sub>6</sub>: 15-9,000 cm<sup>-1</sup>; //a: 300 K; reflection
- [16](TMTSF)<sub>2</sub>PF<sub>6</sub>: 0.1-10 cm<sup>-1</sup>; //a: 300, 100, 20 K; transmission; 10-10,000 cm<sup>-1</sup>; //a: 300, 100, 20 K; reflection; 1-10 cm<sup>-1</sup>; //b: 300, 100, 20 K; transmission; 10-10,000 cm<sup>-1</sup>; //b: 300, 100, 20 K; reflection
- [17](TMTSF)<sub>2</sub>ClO<sub>4</sub>: 5-8,000 cm<sup>-1</sup>; //a: 300, 200, 100, 10 K; reflection
- [18](TMTSF)<sub>2</sub>X: 10<sup>-2</sup>-10<sup>4</sup> cm<sup>-1</sup>; //a: 300, 100, 20 K; reflection
- [19] (TMTSF)<sub>2</sub>X: 7-10<sup>4</sup> cm<sup>-1</sup>; //b', 300, 100, 20, 15, 13, 6 K; reflection

### 3. BEDT-TTF salts

- [20] (BEDT-TTF)<sub>2</sub>ClO<sub>4</sub>(C<sub>2</sub>H<sub>3</sub>Cl<sub>3</sub>)<sub>0.5</sub>: 340-25,000 cm<sup>-1</sup>; //[\bar{1}02]: 300 K; ⊥[\bar{1}02] on (010): 300 K; reflection
- [21]β-(BEDT-TTF)<sub>2</sub>PF<sub>6</sub>: 720-25,000 cm<sup>-1</sup>; //a: 293 K; //c: 293 K; reflection
- [22] α-(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 200-30,000 cm<sup>-1</sup>; //b: RT; ⊥b: RT; reflection  
 β-(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 200-30,000 cm<sup>-1</sup>; //[\bar{1}\bar{1}0]: RT; ⊥[\bar{1}\bar{1}0]: RT; reflection
- [23]β-(BEDT-TTF)<sub>2</sub>PF<sub>6</sub>: 720-25,000 cm<sup>-1</sup>; //a: 293, 318 K; //c: 293, 318 K; reflection  
 (BEDT-TTF)<sub>2</sub>ClO<sub>4</sub>(C<sub>2</sub>H<sub>3</sub>Cl<sub>3</sub>)<sub>0.5</sub>: 720-25,000 cm<sup>-1</sup>; [\bar{1}02]: 293 K; ⊥[\bar{1}02] on (010): 293 K; reflection  
 (BEDT-TTF)<sub>3</sub>(ClO<sub>4</sub>)<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; //[\bar{0}12]: 293 K; ⊥[\bar{0}12] on (100): 293 K; reflection  
 β-(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; //[\bar{0}11]: 293 K; ⊥[\bar{0}11] on (100): 293 K; reflection
- [24]β-(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; //[\bar{0}11]: 293 K; ⊥[\bar{0}11] on (100): 293 K; reflection
- [25]β-(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; //[\bar{0}11]: 293, 30 K; ⊥[\bar{0}11] on (100): 293, 250, 200, 150, 100, 50, 30 K; reflection
- [26] β-(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 20-1600 cm<sup>-1</sup>; Raman (676.4 nm)

- [27]  $\beta$ -(BEDT-TTF)<sub>2</sub>IAuBr: 720-25,000 cm<sup>-1</sup>; //c: 293 K;  $\perp$ c on (010): 293 K; reflection
- [28]  $\alpha$ -(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; //a: RT, 170, 100 K; //b RT, 170, 100 K; reflection  
 $\theta$ -(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; //a: 293 K; //c 293 K; reflection  
 $\beta$ -(BEDT-TTF)<sub>2</sub>IBr<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; // $[\bar{1}10]$ : RT, 150, 100, 75, 50 K;  $\perp$  $[\bar{1}10]$ : RT, 150, 100, 75, 50 K; reflection
- [29]  $\beta$ -(BEDT-TTF)<sub>2</sub>AuI<sub>2</sub>: 10-130 cm<sup>-1</sup>; 1.5, 20, 60 K; powder; Raman (Ar and Kr laser)  
 $\kappa$ -(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 10-130 cm<sup>-1</sup>; 1.5, 20, 60 K; powder; Raman (Ar and Kr laser)
- [30]  $\beta$ -(BEDT-TTF)<sub>2</sub>IBr<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; // $[\bar{1}10]$ : RT, 30 K;  $^{\wedge}$  $[\bar{1}10]$  on (001): RT, 250, 200, 150, 50, 30 K; reflection  
 $\beta$ -(BEDT-TTF)<sub>2</sub>IBr<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; // $[\bar{1}10]$ : RT, 150, 100, 75, 50 K;  $\perp$  $[\bar{1}10]$ : RT, 150, 100, 75, 50 K; reflection
- [31] (BEDT-TTF)<sub>3</sub>(ClO<sub>4</sub>)<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; // $[012]$ : RT, 200, 150 K;  $^{\wedge}$  $[012]$  on (100): RT, 200, 150 K; reflection  
 $\alpha$ -(BEDT-TTF)<sub>3</sub>(ReO<sub>4</sub>)<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; // $[102]$ : RT, 120, 75, 16 K;  $\perp$  $[102]$  on (010): RT, 120, 75, 16 K; reflection
- [32]  $\alpha$ -(BEDT-TTF)<sub>3</sub>(ReO<sub>4</sub>)<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; // $[102]$ : RT, 120, 70, 65, 60, 16 K;  $\perp$  $[102]$  on (010): RT, 120, 70, 65, 60, 16 K; reflection  
 $\alpha$ -(BEDT-TTF)<sub>3</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; // $[102]$ : RT, 170, 100, 75, 18 K;  $\perp$  $[102]$  on (010): RT, 120, 100, 75, 18 K; reflection
- [33] (BEDT-TTF)<sub>2</sub>(ReO<sub>4</sub>): 50-30,000 cm<sup>-1</sup>; //x: RT;  $\perp$ x: RT; reflection  
 $\alpha$ -(BEDT-TTF)<sub>3</sub>(ReO<sub>4</sub>)<sub>2</sub>: 50-30,000 cm<sup>-1</sup>; //x: RT;  $\perp$ x: RT; reflection  
 $\beta$ -(BEDT-TTF)<sub>3</sub>(ReO<sub>4</sub>)<sub>2</sub>: 50-30,000 cm<sup>-1</sup>; //x: 300, 230, 140, 70, 10 K;  $\perp$ x: 300, 230, 140, 70, 10 K; reflection
- [34] (BEDT-TTF)<sub>4</sub>HgCl<sub>8</sub>: 200-8000 cm<sup>-1</sup>; //x: RT; //y: RT: reflection
- [35]  $\beta$ -(BEDT-TTF)<sub>2</sub>IBr<sub>2</sub>: 60-35,000 cm<sup>-1</sup>; //stack: 300, 100, 30 K;  $\perp$ stack: 300, 100, 30 K; reflection  
 $\beta$ -(BEDT-TTF)<sub>2</sub>AuI<sub>2</sub>: 60-35,000 cm<sup>-1</sup>; //stack: 300, 30 K;  $\perp$ stack: 300, 30 K; reflection

- [36]  $\alpha$ -(BEDT-TTF)<sub>2</sub>IAuBr: 720-25,000 cm<sup>-1</sup>; //a: RT; //b: RT; //c: RT; reflection
- [37] (BEDT-TTF)<sub>3</sub>(ClO<sub>4</sub>)<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; // [012]: RT, 200, 150 K;  $\perp$ [012] on (100): RT, 200, 150 K; reflection
- [38] (BEDT-TTF)<sub>3</sub>(ClO<sub>4</sub>)<sub>2</sub>; <sup>13</sup>C(4) and <sup>13</sup>C(6): 200-1600 cm<sup>-1</sup>; single crystal; Raman (632.8 nm)
- [39] (BEDT-TTF)<sub>2</sub>[Cu(NCS)<sub>2</sub>]: 400-25,000 cm<sup>-1</sup>; //b: 293, 100, 50, 25 K; //c: 293, 100, 50, 25 K; reflection
- [40] (BEDT-TTF)<sub>2</sub>[Cu(NCS)<sub>2</sub>]: 200-8,000 cm<sup>-1</sup>; //long axis: RT;  $\perp$ long axis: RT; reflection
- [41]  $\beta$ "-(BEDT-TTF)<sub>2</sub>ICl<sub>2</sub>: 400-25,000 cm<sup>-1</sup>; //c: 293, 200, 100, 40 K;  $\perp$ c on (010): 293, 200, 100, 40 K; reflection
- [42]  $\beta$ -(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; // [110]: 293, 26 K;  $\perp$ [110] on (001): 293, 26 K; reflection
- $\theta$ -(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; //a: 293, 16 K; //c: 293, 16 K; reflection
- $\kappa$ -(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 400-25,000 cm<sup>-1</sup>; //a: 293, 15 K; //c: 293, 15 K; reflection
- $\beta$ "-(BEDT-TTF)<sub>2</sub>ICl<sub>2</sub>: 400-25,000 cm<sup>-1</sup>; //a: 293, 40 K; //c: 293, 40 K; reflection
- $\beta$ '-(BEDT-TTF)<sub>2</sub>ICl<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; //a: 293, 40 K; //c: 293, 40 K; reflection
- [43]  $\theta$ -(BEDT-TTF)<sub>2</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; //a: 295, 200, 120, 16 K; //c: 295, 200, 120, 75, 16 K; reflection
- [44] (BEDT-TTF)<sub>2</sub>[Cu(NCS)<sub>2</sub>]: 100-6,000 cm<sup>-1</sup>; //c: 295 K; //b: 295 K; reflection; 20-6000 cm<sup>-1</sup>; //c: 12 K; //b: 12 K; bolometric and reflection
- [45]  $\kappa$ -(BEDT-TTF)<sub>2</sub>[Cu(NCS)<sub>2</sub>]: 10-60 cm<sup>-1</sup>; //b: 10.5, 5.3 K; bolometric method
- [46] (BEDT-TTF)<sub>2</sub>[Cu(NCS)<sub>2</sub>]: 200-6000 cm<sup>-1</sup>; //b: 295, 100, 50, 30, 12 K; //c: 295, 100, 50, 30, 12 K; reflection
- (d<sub>8</sub>- BEDT-TTF)<sub>2</sub>[Cu(NCS)<sub>2</sub>]: 200-6000 cm<sup>-1</sup>; //b: 295, 100, 25, 12 K; //c: 295, 100, 50, 25, 12 K; reflection
- [47] (BEDT-TTF)<sub>2</sub>[Cu(NCS)<sub>2</sub>]: 100-1600 cm<sup>-1</sup>; powder; FT-Raman (1060 nm)
- [48] (BEDT-TTF)<sub>2</sub>[Cu(NCS)<sub>2</sub>]: 400-600 cm<sup>-1</sup>; powder; RT-Raman (1060 nm)
- [49]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Cl: 200-6000 cm<sup>-1</sup>; //a: 300, 200, 100, 50, 10 K; //c: 300, 200, 100, 50, 10 K; reflection
- [50]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Br: 200-6000 cm<sup>-1</sup>; //a: 295, 50 K; //c: 295, 50 K; reflection

- [51]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Cl: 500-25,000 cm<sup>-1</sup>; E//a: 25K, 60K, 150K, RT; E//c: 25K, 60K, 150K, RT; reflection  
 $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Br: 500-25,000 cm<sup>-1</sup>; E//a: 25K, 60K, 150K, RT; E//c: 25K, 60K, 150K, RT; reflection  
 $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]I: 500-25,000 cm<sup>-1</sup>; E//a: 25K, 60K, 150K, RT; E//c: 25K, 60K, 150K, RT; reflection  
 $\kappa$ -(BEDT-TTF)<sub>2</sub>Ag(CN)<sub>2</sub>H<sub>2</sub>O: 500-25,000cm<sup>-1</sup>; E//c: 25K, 100K, 200K, RT; E//b: 25K, 100K, 200K, RT; reflection
- [52]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Cl<sub>0.5</sub>Br<sub>0.5</sub>: 600-5,000 cm<sup>-1</sup>, 10,000-38,000 cm<sup>-1</sup>; //a: RT; //c: RT; reflection
- [53]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Cl<sub>0.5</sub>Br<sub>0.5</sub>: 600-5,000 cm<sup>-1</sup>, 10,000-38,000 cm<sup>-1</sup>; //a: RT; //c: RT; //[101] on (101): RT; //b: RT; reflection
- [54]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Br: (1) surface impedance; (2) 1200-1600 cm<sup>-1</sup>; powder; Raman (514.5 nm)
- [55]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Br: 200-1600 cm<sup>-1</sup>; single crystal; Raman (632.8 nm)
- [56]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Br (isotope: <sup>13</sup>C(2)-ET, <sup>13</sup>C(6)-ET, <sup>34</sup>S(8)-ET, d(8)-ET): 800-1600 cm<sup>-1</sup>; 10 K; reflection; 10-1600 cm<sup>-1</sup>; RT; Raman
- [57]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Br: 600-5,000 cm<sup>-1</sup>, 10,000-38,000 cm<sup>-1</sup>; //a: RT; //c: RT; reflection  
 $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Cl: 600-5,000 cm<sup>-1</sup>, 10,000-38,000 cm<sup>-1</sup>; //a: RT; //c: RT; reflection
- [58]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Br: 10-150 cm<sup>-1</sup>; 1.8-125 K; Raman (647.1 nm)
- [59]  $\kappa$ -(BEDT-TTF)<sub>2</sub>Cu[N(CN)<sub>2</sub>]Br: 400-1600 cm<sup>-1</sup>; powder; FT-Raman (1060 nm)
- [60] (BEDT-TTF)<sub>4</sub>HgCl<sub>8</sub>: 300-8,000 cm<sup>-1</sup>; //a: RT; //b: RT; reflection
- [61] (BEDT-TTF)<sub>5</sub>Hg<sub>3</sub>Br<sub>11</sub>: 500-25,000 cm<sup>-1</sup>; //[-102]: RT, 200K, 100K;  $\perp$ [-102] on (010): RT, 200K, 100K; reflection  
(BEDT-TTF)HgBr<sub>3</sub>: 5000-25,000 cm<sup>-1</sup>; //L on (-101): RT; 5000-25000 cm<sup>-1</sup>;  $\perp$ L on (001) : RT; 3000-25,000 cm<sup>-1</sup>; //c: RT; reflection
- [62] (BEDT-TTF)<sub>4</sub>Hg<sub>2.89</sub>Br<sub>8</sub>: 650-40,000 cm<sup>-1</sup>; //a: RT; //b: RT; //[110]: RT; //a: RT; reflection

- [63] (BEDT-TTF)<sub>2</sub>[Hg(SCN)<sub>2</sub>Cl]: 600-5,000 cm<sup>-1</sup>, 10,000-38,000 cm<sup>-1</sup>; //b: RT; //c: RT; reflection  
 (BEDT-TTF)<sub>2</sub>[Hg(SCN)<sub>2</sub>Br]: 600-5,000 cm<sup>-1</sup>, 10,000-38,000 cm<sup>-1</sup>; //[011]: RT; //b: RT; reflection
- [64] (h<sub>8</sub>-BEDT-TTF)<sub>4</sub>Hg<sub>3</sub>I<sub>8</sub> and (d<sub>8</sub>-BEDT-TTF)<sub>4</sub>Hg<sub>3</sub>I<sub>8</sub>: 600-5200 cm<sup>-1</sup>; //b: 290, 238 K; ⊥b: 290, 238 K; reflection.
- [65] β-(BEDT-TTF)<sub>5</sub>M(CN)<sub>6</sub>·10H<sub>2</sub>O (M=Co<sup>3+</sup>, Fe<sup>3+</sup>, Cr<sup>3+</sup>): 800-6500 cm<sup>-1</sup>; //: RT; ⊥: RT; reflection.
- [66] (BEDT-TTF)<sub>3</sub>CuBr<sub>4</sub>: 700-6,000 cm<sup>-1</sup>; //b: RT; ⊥b: RT; reflection
- [67] (BEDT-TTF)<sub>4</sub>[Pt(C<sub>2</sub>O<sub>4</sub>)<sub>2</sub>]: 500-25,000cm<sup>-1</sup>; E//a: RT, 100K, 20K; E//b: RT 100K, 20K; reflection
- [68] (BEDT-TTF)<sub>2</sub>(Mo<sub>6</sub>O<sub>19</sub>): 600-9,000 cm<sup>-1</sup>; //: RT; ⊥: RT; reflection; 300-1600 cm<sup>-1</sup>; powder; Raman (488.0 nm)
- [69] BEDT-TTF, (BEDT-TTF)Hg<sub>0.776</sub>(SCN)<sub>2</sub>, (BEDT-TTF)Ag<sub>1.6</sub>(SCN)<sub>2</sub>, α-(BEDT-TTF)<sub>2</sub>(NH<sub>4</sub>)Hg(SCN)<sub>4</sub>, α-(BEDT-TTF)<sub>2</sub>RbHg(SCN)<sub>4</sub>, β-(BEDT-TTF)<sub>2</sub>I<sub>3</sub>, β-(BEDT-TTF)<sub>2</sub>AuI<sub>2</sub>, κ-(BEDT-TTF)Cu[N(CN)<sub>2</sub>]Br, κ-(BEDT-TTF)Cu[N(CN)<sub>2</sub>]Cl, κ-(BEDT-TTF)<sub>4</sub>Hg<sub>3</sub>Cl<sub>8</sub>, (BEDT-TTF)<sub>3</sub>Cl<sub>2</sub>·2H<sub>2</sub>O, (BEDT-TTF)<sub>3</sub>(HSO<sub>4</sub>)<sub>2</sub>, (BEDT-TTF)Cu[N(CN)<sub>2</sub>]<sub>2</sub>, (BEDT-TTF)BiI<sub>4</sub>, (BEDT-TTF)AuBr<sub>2</sub>Cl<sub>2</sub>; single crystal; Raman He-Ne laser)
- [70] β''-(BEDT-TTF)<sub>2</sub>SF<sub>5</sub>CH<sub>2</sub>CF<sub>2</sub>SO<sub>3</sub>: 30-30,000 cm<sup>-1</sup>; //b: 300,200, 125, 65, 14 K; ⊥b: 300,200, 125, 65, 14 K; reflection
- [71] (BEDT-TTF)<sub>2</sub>Ge(C<sub>2</sub>O<sub>4</sub>)<sub>3</sub>·PhCN: 600-30,000 cm<sup>-1</sup>; //x; RT; ⊥x; RT; reflection

#### 4. BEDT-TTF derivatives and other CT salts

- [72] (BMDT-TTF)AsF<sub>6</sub>: 2,000-25,000 cm<sup>-1</sup>; //b: RT; //c: RT; reflection  
 (BMDT-TTF)SbF<sub>6</sub>: 2,000-25,000 cm<sup>-1</sup>; //a: RT; //b: RT; //c: RT; reflection
- [73] (BPDT-TTF)<sub>3</sub>(PF<sub>6</sub>)<sub>2</sub>: 720-25,000 cm<sup>-1</sup>; //a: RT; ⊥a on (001); ⊥a on (010): RT; reflection  
 (BPDT-TTF)<sub>2</sub>I<sub>3</sub>: 720-25,000 cm<sup>-1</sup>; //[011]: RT; ⊥[011] on (100): RT; //[111]: RT; ⊥[011] on (0 $\bar{1}$ 1): RT; reflection
- [74] (BEDO-TTF)<sub>2</sub>ReO<sub>4</sub>·H<sub>2</sub>O: 650-6,500 cm<sup>-1</sup>; //c: 295 K; ⊥c: 295 K; reflection

- (BEDO-TTF)<sub>2</sub>Cl<sub>3</sub>·H<sub>2</sub>O: 650-6,500 cm<sup>-1</sup>; //c: 300 K; //b: 300 K; reflection
- [75] α-BETS<sub>2</sub>I<sub>3</sub>: 400-25,000cm<sup>-1</sup> ; E//b: RT, 100K, 30K; E//a: RT, 100K, 30K; reflection
- [76] α-(BETS)<sub>2</sub>I<sub>3</sub>: 400-25,000 cm<sup>-1</sup>; E//a: RT, 150K, 100K, 25K; E//b: RT, 150K, 100K, 25K; reflection
- α-(BEDT-STF)<sub>2</sub>I<sub>3</sub> 400-25,000cm<sup>-1</sup> E//a: RT; E//b: RT; reflection
- [77] α-EDT-TTF[Ni(dmit)<sub>2</sub>]: E//[110]: 25K, 150K, RT; E⊥[110] on (001) 25K, 150K, RT; reflection
- [78] (TTM-TTP)<sub>3</sub>I<sub>3</sub>: 650-25,000 cm<sup>-1</sup>; E//c: RT; E⊥c on (100): RT; 650-5,000 cm<sup>-1</sup>; E//c 300K, 200K, 100K
- (TMET-TTP)(PF<sub>6</sub>)<sub>0.27</sub>: 650-12,000 cm<sup>-1</sup>; E//c: RT; E//b: RT; reflection
- [79] (BDT-TTP)<sub>2</sub>SbF<sub>6</sub>: 600-25,000 cm<sup>-1</sup>; //a: 300 K, 250 K, 200 K, 150 K, 50 K, 10 K; ⊥a on (010): 300 K, 250 K, 200 K, 150 K, 50 K, 10 K; reflection
- (BDT-TTP)<sub>2</sub>AsF<sub>6</sub>: 600-25,000 cm<sup>-1</sup>; //a ; RT; ⊥a on (010): RT; reflection
- [80] DMTSA-BF<sub>4</sub>: 700-25,000 cm<sup>-1</sup>; //c: RT; ⊥c on (001): RT; 600-8200 cm<sup>-1</sup>; //c: 297 K, 200 K, 100 K, 10 K; 600-5000 cm<sup>-1</sup>; ⊥c on (001): 297 K, 150 K, 10 K; reflection
- [81] DMTSA-BF<sub>4</sub>: 600-25,000 cm<sup>-1</sup>; //c: RT; ⊥c on (001): RT; 600-8200 cm<sup>-1</sup>; //c
- [82] DMTSA-BF<sub>4</sub>: 600-25,000 cm<sup>-1</sup>; //c: RT ; 600-8200 cm<sup>-1</sup>; ⊥c on (001): RT; reflection
- DMTTA-BF<sub>4</sub>: 600-25,000 cm<sup>-1</sup>; //c: 297 K, 200 K, 100 K, 10 K; 600-8200 cm<sup>-1</sup>; ⊥c on (001): 297 K, 150 K, 10 K; reflection
- [83] (BEDT-ATD)<sub>2</sub>PF<sub>6</sub>(THF): 600-25,000 cm<sup>-1</sup>; //c: 297 K, 200 K, 100 K, 10 K; 600-8200 cm<sup>-1</sup>; ⊥c on (001): 297 K, 150 K, 10 K; reflection

## 5. M(dmit)<sub>2</sub> salts

- [84] α-EDT-TTF[Ni(dmit)<sub>2</sub>]: 500-25,000 cm<sup>-1</sup>; //b:RT; ⊥b on (001):RT; reflection
- [85] Me<sub>4</sub>N[Ni(dmit)<sub>2</sub>]<sub>2</sub>: 500-25,000 cm<sup>-1</sup>; E//a: 25K, 150K, RT; E//b: 25K, 150K, RT; reflection
- Cs[Pd(dmit)<sub>2</sub>]<sub>2</sub>: 500-25,000 cm<sup>-1</sup>; E//a: RT, 200K, 80K, 50K, 20K; E//b: RT, 200K, 80K, 50K, 20K; reflection

- Me<sub>4</sub>As[Pd(dmit)<sub>2</sub>]<sub>2</sub>: 500-25,000 cm<sup>-1</sup>; E//a: RT, 200K, 20K; E//b: RT, 200K, 20K; reflection
- Et<sub>2</sub>Me<sub>2</sub>N[Ni(dmit)<sub>2</sub>]<sub>2</sub>: 500-25,000 cm<sup>-1</sup>; E//a: 295K, 200K, 100K, 25K; E//c: 295K, 200K, 100K, 25K; reflection
- α-EDT-TTF[Ni(dmit)<sub>2</sub>]: 500-25,000 cm<sup>-1</sup>; E//b: RT; E⊥b on (001): RT; reflection
- [86] Cs[Pd(dmit)<sub>2</sub>]<sub>2</sub>: 500-25,000cm<sup>-1</sup>; E//a: RT, 200K, 80K, 50K, 20K; E//b: RT, 200K, 80K, 50K, 20K; reflection
- [87] Me<sub>4</sub>N[Ni(dmit)<sub>2</sub>]<sub>2</sub>: 500-25,000cm<sup>-1</sup>;E//a: 25K, 150K, RT; E//b: 25K, 150K, RT; reflection
- Cs[Pd(dmit)<sub>2</sub>]<sub>2</sub>: 500-25,000cm<sup>-1</sup>; E//a: RT, 200K, 80K, 50K, 20K; reflection
- Me<sub>4</sub>As[Pd(dmit)<sub>2</sub>]<sub>2</sub>: 500-25,000cm<sup>-1</sup>; E//a: RT, 200K, 20K; reflection
- (CH<sub>3</sub>)<sub>4</sub>N[Pt(dmit)<sub>2</sub>]<sub>2</sub>: E//a: RT, 200K, 100K, 30K; reflection
- [88] Cs[Pd(dmit)<sub>2</sub>]<sub>2</sub>: 500-25,000cm<sup>-1</sup>; E//a: RT, 200K, 80K, 50K, 20K; E//b: RT, 200K, 80K, 50K, 20K; reflection
- Me<sub>4</sub>As[Pd(dmit)<sub>2</sub>]<sub>2</sub>; 500-25,000cm<sup>-1</sup>; E//a: RT, 200K, 20K; E//b: RT, 200K, 20K; reflection
- [89] (NMe<sub>4</sub>)[Pd(dsit)<sub>2</sub>]<sub>2</sub>: 5,000-25,000cm<sup>-1</sup>; E//a: RT; E//b: RT; reflection
- [90] TPP<sub>1/3</sub>[Ni(dmit)<sub>2</sub>]; 650-25,000 cm<sup>-1</sup>; E//a: 290K; E//b: 290K; reflection
- [91] TPP<sub>1/3</sub>[Ni(dmit)<sub>2</sub>]; 650-25000 cm<sup>-1</sup>; E//a: 290K; E//b: 290K; reflection
- [92] Et<sub>4</sub>N[Au(dmit)<sub>2</sub>]TCNQ: 400-7,000 cm<sup>-1</sup>; //b: RT; ⊥b: RT; transmission
- [93] (Ph<sub>4</sub>P)[Ni(dmit)<sub>2</sub>]<sub>3</sub>: 100-32,000 cm<sup>-1</sup>; //b: RT; ⊥b on (001); RT; reflection
- (Bu<sub>4</sub>N)<sub>2</sub>[Ni(dmit)<sub>2</sub>]<sub>7</sub>·2CH<sub>3</sub>CN:100-32,000 cm<sup>-1</sup>; //[110]: RT; ⊥[110] on (001): RT; reflection
- (Me<sub>3</sub>S)[Ni(dmit)<sub>2</sub>]<sub>2</sub>: 100-32,000 cm<sup>-1</sup>; //a: RT; ⊥a on (010); RT; reflection

## 6. M(DCNQI)<sub>2</sub> salts

- [94] (Me<sub>2</sub>-DCNQI)<sub>2</sub>Na: 750-25,000 cm<sup>-1</sup>; //b: RT; ⊥b: RT; reflection
- (Me<sub>2</sub>-DCNQI)<sub>2</sub>Cu: 750-25,000 cm<sup>-1</sup>; //b: RT; ⊥b: RT; reflection
- [95] (Me<sub>2</sub>-DCNQI)<sub>2</sub>Ag: 450-25,000 cm<sup>-1</sup>; //c: RT; //a: RT; reflection
- (Me<sub>2</sub>-DCNQI)<sub>2</sub>Na: 450-25,000 cm<sup>-1</sup>; //stack: 293 K, 100 K, 20 K; reflection
- (Me<sub>2</sub>-DCNQI)<sub>2</sub>Cu: 450-25,000 cm<sup>-1</sup>; //c: 293 K, 100 K, 20 K; //a: 293 K, 100 K, 20 K; reflection



- (MeBr-DCNQI)<sub>2</sub>Cu: 450-25,000 cm<sup>-1</sup>; //c: 293 K, 200 K, 100 K, 20 K; //a: 293 K, 200 K, 100 K, 20 K; reflection
- [96] (Me<sub>2</sub>DCNQI-d<sub>7</sub>)<sub>2</sub>Cu: 650-5000 cm<sup>-1</sup>; E//c: RT, 150K, 85K, 81K, 77K, 75K, 50K, 15K; E//a: RT, 150K, 85K, 81K, 77K, 75K, 50K, 15K; reflection
- (Me<sub>2</sub>DCNQI-d<sub>7</sub>)<sub>2</sub>Cu: (stressed) 650-25000cm<sup>-1</sup>; E//c: RT, 250K, 200K, 150K, 100K, 75K, 50K, 30K; E//a: RT, 250K, 200K, 150K, 100K, 75K, 50K, 30K; reflection
- [97](Me<sub>2</sub>DCNQI-d<sub>7</sub>)<sub>2</sub>Cu: 650-5000cm<sup>-1</sup>; E//c: RT, 150K, 85K, 81K, 77K, 75K,50K, 15K; E//a: RT,150K,85K,81K,77K,75K,50K,15K; reflection
- (Me<sub>2</sub>DCNQI-d<sub>7</sub>)<sub>2</sub>Cu: (stressed) 650-25000cm<sup>-1</sup>; E//c: RT, 250K, 200K, 150K, 100K, 75K, 50K, 30K; E//a: RT, 250K, 200K, 150K, 100K, 75K, 50K, 30K; reflection

## 7. Transition Metal Complex

### 7-1. Phthalocyanine

- [98] NiPc(I<sub>3</sub>)<sub>0.33</sub>: 5,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- [99] CoPc(I<sub>3</sub>)<sub>0.33</sub>: 5,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- [100] H<sub>2</sub>Pc(I<sub>3</sub>)<sub>0.33</sub>: 1000-40,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- [101] CuPc(I<sub>3</sub>)<sub>0.33</sub>: 5,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- [102] NiPc(SbF<sub>6</sub>)<sub>0.5</sub>: 4,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- PtPc(ClO<sub>4</sub>)<sub>0.5</sub>: 5,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- (NiTBP)<sub>3</sub>(AsF<sub>6</sub>)<sub>2</sub>: 4,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- [103] NiPc(SbF<sub>6</sub>)<sub>0.5</sub>: 4,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT, 80 K; reflection
- NiPc(AsF<sub>6</sub>)<sub>0.5</sub>: 5,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- [104] PtPc(ClO<sub>4</sub>)<sub>0.5</sub>: 5,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- [105] NiPc(AsF<sub>6</sub>)<sub>0.5</sub>: 5,000-12,000 cm<sup>-1</sup>; //c: RT, 3 kbar, 5 kbar, 8 kbar, 12 kbar, 16 kbar; reflection
- [106] CoPc(AsF<sub>6</sub>)<sub>0.5</sub>: //c: RT; ⊥c: RT; reflection
- [107] NiPc(SbF<sub>6</sub>)<sub>0.5</sub>: 4,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- H<sub>2</sub>Pc(AsF<sub>6</sub>)<sub>0.67</sub>: 1,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- LiPc: 2,000-25,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection
- [108] CuPc(I<sub>3</sub>)<sub>0.33</sub>: 11,000-45,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection

- CoPc(I<sub>3</sub>)<sub>0.33</sub>: 11,000-45,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection  
 H2Pc(I<sub>3</sub>)<sub>0.33</sub>: 11,000-45,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection  
 CoPc(I<sub>3</sub>)<sub>0.33</sub>: 11,000-45,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection  
 NiPc(I<sub>3</sub>)<sub>0.33</sub>: 11,000-45,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection  
 [109] Co(tbp)(I<sub>3</sub>)<sub>0.33</sub>: 11,000-45,000 cm<sup>-1</sup>; //c: RT; ⊥c: RT; reflection  
 [110] NiPc(SbF<sub>6</sub>)<sub>0.5</sub>: 400-1,800 cm<sup>-1</sup>; 0-4.7 GPa; 2,000-10,000 cm<sup>-1</sup>; 0-7.1 GPa;  
 11,000-23,000 cm<sup>-1</sup>; 0-6.3 GPa; transmission  
 [111] NiPc(SbF<sub>6</sub>)<sub>0.5</sub>: 400-1,800 cm<sup>-1</sup>; 0-4.7 GPa; 2,000-10,000 cm<sup>-1</sup>; 0-7.1 GPa;  
 11,000-23,000 cm<sup>-1</sup>; 0-6.3 GPa; transmission  
 CoPc(AsF<sub>6</sub>)<sub>0.5</sub>: 600-1800 cm<sup>-1</sup>; 0-6 GPa; 2,000-10,000 cm<sup>-1</sup>; 0-6.2 GPa; 12,000-  
 25,000 cm<sup>-1</sup>; 0-5.4 GPa; transmission  
 [112] NiPc(SbF<sub>6</sub>)<sub>0.5</sub>: 400-1,800 cm<sup>-1</sup>; 0-4.7 GPa; 2,000-10,000 cm<sup>-1</sup>; 0-7.1 GPa;  
 11,000-23,000 cm<sup>-1</sup>; 0-6.3 GPa; transmission  
 [113] NiPc(SbF<sub>6</sub>)<sub>0.5</sub>: 2,000-10,000 cm<sup>-1</sup>; 0-7.1 GPa; transmission

#### 7-2. *M*(ddd<sub>t</sub>)<sub>2</sub>

- [114] [Pt(ddd<sub>t</sub>)<sub>2</sub>]<sub>2</sub>Ibr<sub>2</sub>: 300-17,000 cm<sup>-1</sup>; //b: RT; ⊥b: RT; reflection  
 [115] [Ni(ddd<sub>t</sub>)<sub>2</sub>]<sub>3</sub>(HSO<sub>4</sub>)<sub>2</sub>: 600-5,200 cm<sup>-1</sup>; //long axis: RT; ⊥long axis: RT;  
 reflection.  
 [116] [Ni(ddd<sub>t</sub>)<sub>2</sub>]<sub>3</sub>(HSO<sub>4</sub>)<sub>2</sub>: 600-5,200 cm<sup>-1</sup>; //long axis: RT; ⊥long axis: RT;  
 reflection.  
 (BEDT-TTF)<sub>3</sub>(HSO<sub>4</sub>)<sub>2</sub>: 600-5,200 cm<sup>-1</sup>; //long axis: RT; ⊥long axis: RT;  
 reflection.

### 8. M<sub>3</sub>C<sub>60</sub>

- [117] K<sub>3</sub>C<sub>60</sub>: 10-60,000 cm<sup>-1</sup>; 6, 15, 25 K, RT; reflection  
 Rb<sub>3</sub>C<sub>60</sub>: 10-60,000 cm<sup>-1</sup>; RT; 6, 15, 25, 40 K, RT; reflection  
 [118] K<sub>3</sub>C<sub>60</sub>: 10-60,000 cm<sup>-1</sup>; 6, 12, 15, 20, 30, 60 K, RT; reflection  
 Rb<sub>3</sub>C<sub>60</sub>: 10-60,000 cm<sup>-1</sup>; RT; 6, 20, 25, 30, 40 K, RT; reflection  
 [119] TDAE-C<sub>60</sub>: 10-32,000 cm<sup>-1</sup>; RT; reflection

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