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Supporting Information

Stacking-induced different performance on mechanochromic luminescence and room-temperature phosphorescence based on two analogue AIEgens synthesized by green photo-oxidaiton reaction

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1. Experimental details

General information: All the solvents used for the synthesis were purchased from Aldrich and used without further purification. The ¹H NMR spectra were recorded on Bruker AVANCE III instrument (Bruker, Switzerland), using tetramethylsilane (TMS) as the internal standard. The GC-MS mass spectra were recorded using Thermo Fisher ITQ1100 instrument. The single crystal structure was carried out with an Agilent Geminie instrument.

Photophysical measurements: UV-vis spectra of solutions and films were recorded on a Shimadzu UV-3100 Spectrophotometer. Steady-state photoluminescence (PL) spectra and lifetimes were carried out with FLS980 Spectrometer. The FT-IR spectra were carried out with a Nicolet 6700 instrument. Quantum efficiencies were measured using an integrating sphere apparatus. Solutions were placed in 1 cm path length quartz cells, and solids were fixed on the quartz plate in terms of steady-state spectra and lifetimes.

Theoretical calculation: TD-DFT calculations were performed on Gaussian 09 program. The ground (S_0) and lowest triplet (T_1) state geometries were fully optimized with the Becke's threeparameter exchange functional along with the Lee Yang Parr's correlation functional (B3LYP) using 6-31G (d) basis sets. These optimized stationary points were further characterized by harmonic vibration frequency analysis to ensure that real local minima had been found. The excitation energies in the *n*-th singlet (S_n) and *n*-th triplet (T_n) states of monomer and dimer were obtained using the TD-DFT method based on single crystal structure.

2. Synthesis Process



Synthesis of 4,5-bis(4-bromophenyl)-1,2-diphenyl-1H-imidazole (Br-PIM): A mixture of aniline (931mg, 10.0 mmol), 1,2-bis(4-bromophenyl)ethane-1,2-dione (730mg, 2.0 mmol), 9-ethyl-9H-carbazole-3-carbaldehyde (446 mg, 2.0 mmol), ammonium acetate (617 mg, 8.0 mmol), and acetic acid (15 mL) was stirred at 120°C for 14 h under nitrogen, Then, some water was added to the resulting solution and the mixture was extracted with chloroform several times. The organic phase was dried over anhydrous magnesium sulfate. After filtration and solvent evaporation, the liquid was purified by column chromatography using petroleum ether/CH2Cl2 as the eluent to afford a white solid (901mg, 85%). ¹H NMR (500 MHz, CDCl₃) δ 7.48 – 7.44 (m, 2H), 7.40 (dd, *J* = 7.4, 4.7 Hz, 4H), 7.39 – 7.36 (m, 2H), 7.35 – 7.31 (m, 2H), 7.31 – 7.28 (m, 2H), 7.27 – 7.23 (m, 2H), 7.06 – 7.02 (m, 2H), 7.00 – 6.96 (m, 2H). MS (ESI): MW 530.26, m/z 531.0 (M+).

Synthesis of 9-(4-(1,4,5-triphenyl-1H-imidazol-2-yl)phenyl)-9H-carbazole (CZ-PIM) : A mixture of carbazole (450 mg, 1.0 mmol), Br-PIM (451 mg, 1.0 mmol), CuI (10.0 mg, 0.05 mmol), 18-crown-6 (13.2 mg, 0.05 mmol), and K₂CO₃ (0.83 g, 6.0 mmol) in 1,3-dimethyltetrahydropyrimidin-2(1H)-one (DMPU) (2.0 mL) was heated at 170 °C for 48 h under nitrogen. After cooling to room temperature, dichloromethane was added and the mixture was extracted with chloroform for several times. The organic phase was dried over anhydrous magnesium sulfate. Then the solvent was removed under reduced pressure, and the residue was purified by column chromatography on silica gel with dichloromethane as eluent. White powder (yield: 84%). ¹H NMR (400 MHz, DMSO) δ 7.79 – 7.62 (m, 3H), 7.52 (d, *J* = 7.2 Hz, 2H), 7.45 – 7.30 (m, 10H), 7.27 (t, *J* = 6.6 Hz, 3H), 7.20 (t, *J* = 7.3 Hz, 1H), 6.74 (dd, *J* = 6.0, 3.4 Hz, 2H), 6.72 – 6.62 (m, 4H), 5.82 (dd, *J* = 5.9, 3.5 Hz, 2H).MS (ESI): MW 537.67, *m/z* 539.6 (M+).

Synthesis of 9-ethyl-3-(1,4,5-triphenyl-1H-imidazol-2-yl)-9H-carbazole (*p***-CZ-BM):** A mixture of aniline (931mg, 10.0 mmol), benzil (420 mg, 2.0 mmol), 9-ethyl-9H-carbazole-3-carbaldehyde (446 mg, 2.0 mmol), ammonium acetate (617 mg, 8.0 mmol), and acetic acid (15 mL) was stirred at 120°C for 14 h under nitrogen, Then, some water was added to the resulting solution and the mixture was extracted with chloroform several times. The organic phase was dried over anhydrous magnesium sulfate. After filtration and solvent evaporation, the liquid was purified by column chromatography using petroleum ether/CH2Cl2 as the eluent to afford a white solid (500 mg, 51%).

¹H NMR (500 MHz, DMSO) δ 8.13 (d, J = 1.1 Hz, 1H), 7.94 (d, J = 7.7 Hz, 1H), 7.61 (d, J = 8.2 Hz, 1H), 7.57 – 7.44 (m, 5H), 7.33 (qd, J = 6.4, 3.7 Hz, 8H), 7.30 – 7.25 (m, 4H), 7.19 (t, J = 7.6 Hz, 2H), 4.42 (q, J = 7.1 Hz, 2H), 1.30 (t, J = 7.1 Hz, 3H). MS (ESI): MW 489.6, m/z 490.3 (M+).

Photo-oxidation reaction product (CZ-PYZ): Compound *p*-CZ-PIM (100 mg, 0.2mmol), Methyl blue (20 mg, 0.025 mmol) is dissolved in toluene and irradiated by 365nm UV lamp (6w) for about 2 weeks. After evaporation, the resulting solution was purified by column chromatography using ethyl acetate/petroleum ether as the eluent to afford the product as an orange solid (54 mg, 38%). ¹H NMR (500 MHz, DMSO) δ 8.30 – 8.20 (m, 2H), 8.02 (d, *J* = 8.5 Hz, 2H), 7.69 (d, *J* = 8.2 Hz, 6H), 7.56 (t, *J* = 7.4 Hz, 1H), 7.44 (ddd, *J* = 21.2, 17.8, 10.0 Hz, 7H), 7.38 – 7.23 (m, 8H), 7.14 (t, *J* = 7.4 Hz, 1H). MS (ESI): MW 569.2, *m/z* 570.2 (M+).

Photo-oxidation reaction product (*p*-**CZ-BYZ):** Compound CZ-PIM (100 mg, 0.2mmol) is dissolved in toluene and irradiated by 365nm UV lamp (6w) for about 48 h. After evaporation, the resulting solution was purified by column chromatography using ethyl acetate/petroleum ether as the eluent to afford the product as an orange solid (40 mg, 38%). ¹H NMR (500 MHz, DMSO) δ 8.69 (d, *J* = 1.7 Hz, 1H), 8.21 (d, *J* = 7.8 Hz, 1H), 7.86 (dd, *J* = 8.7, 1.8 Hz, 1H), 7.72 – 7.65 (m, 4H), 7.65 – 7.60 (m, 2H), 7.52 (ddd, *J* = 11.9, 9.2, 4.3 Hz, 2H), 7.46 – 7.42 (m, 2H), 7.37 (dd, *J* = 15.2, 7.7 Hz, 3H), 7.30 – 7.22 (m, 5H), 7.09 (t, *J* = 7.4 Hz, 1H), 4.44 (q, *J* = 7.1 Hz, 2H), 1.33 – 1.25 (m, 3H). MS (ESI): MW 521.6, *m*/z 522.2 (M+).

3. Photophysical Properties



Scheme S1. structural representations of CZ-PIM and p-CZ-PIM in excited states.

Compound	$\lambda_{abs}[nm]$	$\lambda_{em}[nm]$	Φ [%]	τ[ns]
CZ-PYZ	350	528	2.1	2.65
p-CZ-BYZ	340	478	1.3	1.67

Table S1. photoluminescent data of CZ-PYZ and *p*-CZ-BYZ in DCM with the concentration of $1 \times 10-5$ mol L⁻¹.



Fig. S1. Photoluminescence spectra of (a) CZ-PYZ and (b) *p*-CZ-BYZ in different solvent polarity solution.



Fig. S2. Photoluminescence spectra of (a) CZ-PYZ and (b) *p*-CZ-BYZ in DCM with different concentrations.



Fig. S3. Photoluminescence spectra of *p*-CZ-BYZ powder at different temperature from 80 K to 300K.



Fig. S4. Infrared Spectroscopy (IR) spectra of (a) CZ-PYZ and (b) *p*-CZ-BYZ in pristine states as well as after grinding and after DCM solvent fuming.

Table S2. photoluminescent data of CZ-PYZ and *p*-CZ-BYZ in various solids state including after grinding and after DCM solvent fuming.

 $\begin{array}{cccc} & & & & & & & \\ \text{Compound} & & & & & \\ & & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ &$





Fig. S5 Reversible cycles of the PL wavelength switching of ground and fumed samples during the repeated grinding-fuming processes for (a) *p*-CZ-BYZ and (b) CZ-PYZ.



Fig. S6. Photoluminescence spectra of *p*-CZ-BYZ doped PMMA film at room temperature. The inset graph was time-resolved spectra of *p*-CZ-BYZ doped PMMA film at 470 nm.



Fig. S7. Photoluminescence spectra of CZ-PYZ doped PMMA film at room temperature. The inset graph was time-resolved spectra of CZ-PYZ doped PMMA film at 470nm.



Fig. S8. (a) Photoluminescence spectra and phosphorescence spectra of CZ-PYZ doped PMMA film at 80K. (b) Time-resolved spectra of CZ-PYZ doped PMMA film at 470 nm and 530 nm.



Fig. S9. (a) Photoluminescence spectra and phosphorescence spectra of *p*-CZ-BYZ doped PMMA film at 80K. (b) Time-resolved spectra of *p*-CZ-BYZ doped PMMA film at 470 nm and 530 nm.

4. Theoretical calculations



Fig. S10. Schematic diagram of singlet and triplet energy levels of CZ-PYZ (a) monomer and (b) dimer; Schematic diagram of singlet and triplet energy levels of *p*-CZ-BYZ (c) monomer and (d) dimer. The purple dashed arrows correspond to the ISC processes probably occurring from the S1 state to the closest lower-lying triplet states (Tn).

Table S3. The singlet and triplet excited state transition configurations of CZ-PYZ monomer revealed by TD-DFT calculations. The matched excited states that contain the same orbital transition components of S1 were highlighted in red.

	n 4h	Energy	Transition configuration
	n-tn	(eV)	(%)
Sn	1	3.9762	H-9→L (4.25), H→L (80.42), H→L+1 (2.53)
	1	2 1952	H-9→L (13.76), H-6→L (3.20), H-5→L (3.52), H-4→L (3.31),
	1	5.1055	H-3→L (3.44), H-2→L(6.00), H→L (50.84), H→L+1 (2.66)
	2	2 (212	H-14→L+11 (3.41), H-1→L (2.52), H-1→L+1 (4.62), H-
	2	5.0212	1→L+2 (77.25), H→L+7 (2.10), H→L+8 (2.28)
		3 3.6749	H-13→L (3.59), H-12→L (6.17), H-12→L+1 (3.34), H-11→L
	2		$(4.24), \text{H-11}\rightarrow\text{L+1} (2.18), \text{H-10}\rightarrow\text{L} (22.44), \text{H-10}\rightarrow\text{L+1} (3.06),$
	3		H-9→L (6.33), H-9→L+1 (4.88), H-3→L (3.81), H-2→L (6.22),
			$H \rightarrow L (6.98)$
Tn	4	3.8310	H-7 \rightarrow L+11 (2.97), H \rightarrow L+1 (3.26), H \rightarrow L +2 (83.80)
	5	3 08/3	H-13→L (2.24), H-10→L (5.14), H-10→L+1 (6.56), H-6→L+1
	3	3.9043	(14.48), H-2 \rightarrow L (29.06), H-2 \rightarrow L+1 (4.09), H \rightarrow L (4.75)
			H-15→L (3.34), H-15→L+1 (2.03), H-12→L (2.58), H-
			12→L+1 (2.26), H-9→L+1 (6.77), H-6→L (8.75) H-
	6	4.0785	6→L+1 (11.58), H-4→L+1 (2.39), H-3→L (4.24), H-
			$3 \rightarrow L+5$ (2.18), H-2 $\rightarrow L$ (8.35), H-2 $\rightarrow L+1$ (9.67), $H \rightarrow L$
			(3.36)
	7	4.1743	H-15→L (9.54) H-12→L+1 (2.7) H-10→L (7.64) H-

			10→L+1 (3.62), H-10→L+3 (2.44), H-9→L+1 (2.29),
			H-6→L (7.18), H-4→L (7.11), H-4→L+3 (6.61), H-
			$4 \rightarrow L + 4 (5.25)$
			H-15→L (12.13), H-10→L (6.62), H-10→L+1 (3.17),
	8	4 2008	H-6→L (4.58), H-5→L+9 (4.46), H-4→L (5.38), H-
		4.2908	4→L+3 (10.77), H-4→L+4 (8.06), H-4→L+6 (2.71),
			H→L+3 (2.05)
		4.4284	H-11→L (2.31), H-10→L+3 (2.34), H-5→L+3 (2.53), H-
	9		$1 \rightarrow L+2$ (2.04), $H \rightarrow L$ (2.26), $H \rightarrow L+3$ (29.73),
			H→L+4 (13.30), H→L+7 (4.71), H→L+8 (2.96)
			H-13→L+6 (2.08), H-8→L+5 (6.44), H-8→L+7 (2.08),
			H-8→L+8 (2.06), H-3→L+1 (3.76), H-3→L+5 (4.67),
	10	10 4.4439	H-2→L+1 (5.66), H-2→L+3 (5.12), H-2→L+4 (14.65),
			H-2→L+6 (7.48), H-2→L+9 (3.02), H-2→L+10 (3.10),
			H→L+3 (3.85), H→L+4 (2.04)

Table S4.The singlet and triplet excited state transition configurations of CZ-PYZ dimer revealed by TD-DFT calculations. The matched excited states that contain the same orbital transition components of S1 were highlighted in red.

		Energy	Transition configuration
	n-tn	(eV)	(%)
Sn	1	3 0023	H-1→L (23.42), H-1→L+1 (10.33), H→L (18.99), H→L+1
51	1	5.9025	(31.91)
			H-9→L (4.25), H-18→L+1 (3.33), H-9→L (2.15), H-8→L+1
	1	3.1505	(3.88), H-5→L (2.26), H-4→L+1 (2.81), H-1→L (2.60), H-
			1→L+1 (20.21), H→L (25.90), H→L +1 (2.63)
			H-19→L+1 (4.26), H-18→L (3.39), H-9→L+1 (2.17), H-8→L
	2	3.1520	$(3.93), \text{H-5}\rightarrow\text{L+1} (2.64), \text{H-4}\rightarrow\text{L} (2.48), \text{H-1}\rightarrow\text{L} (20.92),$
			H→L+1 (2.53), H→L (2.72), H→L+1 (25.06)
	3	3.5871	H-3→L+4 (34.40), H-2→L+5 (38.71), H→L+5 (5.06)
	4	3.5980	H-3→L+5 (33.11), H-2→L+4 (40.86), H→L+4 (4.03), H→L
			+15 (2.22)
	5	5 3.6721	H-28→L+1 (2.66), H-25→L (2.13), H-23→L (2.51), H-22→L+1
Tn			$(3.83), \text{H-}21 \rightarrow \text{L+}1 (7.79), \text{H-}20 \rightarrow \text{L+}1 (11.54), \text{H-}20 \rightarrow \text{L+}3$
			$(2.73), \text{H-19}\rightarrow\text{L+1} (3.17), \text{H-5}\rightarrow\text{L} (2.78), \text{H-4}\rightarrow\text{L+1} (3.25), \text{H-}$
			$1 \rightarrow L+1$ (2.13), $H \rightarrow L$ (3.38)
			H-28→L (2.64), H-25→L+1 (2.16), H-23→L+1 (2.48),
			H-22→L (3.86), H-21→L (7.63), H-20→L (2.04), H-
	6	3.6727	$20 \rightarrow L+1 (12.20), H-20 \rightarrow L+2 (2.64), H-18 \rightarrow L (3.10),$
			$H-5 \rightarrow L+1$ (3.32), $H-4 \rightarrow L$ (2.69), $H-1 \rightarrow L$ (2.34),
			$H \rightarrow L+1 (3.16)$
	7	3.7860	$H-2 \rightarrow L+5$ (2.19), $H-1 \rightarrow L+4$ (41.02), $H \rightarrow L+5$ (42.12)
	8	3.7914	$H-2 \rightarrow L+4$ (2.42), $H-1 \rightarrow L+5$ (38.27), $H \rightarrow L+4$ (44.72)
	9	3.9816	H-22 \rightarrow L+1 (2.50), H-21 \rightarrow L+2 (2.71), H-20 \rightarrow L+3

			(2.14), H-14 \rightarrow L+2 (6.72), H-13 \rightarrow L+3 (6.68), H-5 \rightarrow L
			$(13.60), \text{H-4}\rightarrow\text{L+1} (14.33), \text{H-4}\rightarrow\text{L+2} (2.07), \text{H}\rightarrow\text{L}$
			(3.23)
			H-21→L (2.44), H-21→L+3 (2.77), H-20→L+2 -(2.05),
	10	3.9823	H-14→L+3 (7.01), H-13→L+2 (6.53), H-5→L+1
			(14.37), H-5→L+2 (2.11), H-4→L (13.56), H-4→L+3
			$(2.05), H \rightarrow L+1 (2.86)$

Table S5. The singlet and triplet excited state transition configurations of p-CZ-BYZ monomer revealed by TD-DFT calculations. The matched excited states that contain the same orbital transition components of S1 were highlighted in red.

	n th	Energy	Transition configuration
	11-t11	(eV)	(%)
			H-13→L+2 (2.80), H-10→L (8.50), H-10→L+2 (3.33),
6-	1	2 0950	H-8→L (37.46), H-8→L+2 (7.10), H-8→L+11 (2.27),
SI	1	5.9850	H-7→L (6.32), H-3→L (2.99), H-1→L (3.47), H→L
			(8.99)
			H-8→L (9.36), H-3→L (2.72), H-2→L (4.37), H-1→L
	1	3.2480	(9.15), H-1 \rightarrow L+2 (2.20), H \rightarrow L (44.42), H \rightarrow L+1 (3.02),
			$H \rightarrow L+2 (5.16)$
			H-10→L (8.69), H-10→L+2 (2.83), H-8→L (25.41), H-
		2 (40 2	8→L+2 (7.74), H-8→L+11 (2.57), H-7→L (12.09), H-
	2	3.0492	$6 \rightarrow L+2$ (2.31), $H-1 \rightarrow L+1$ (3.32), $H-1 \rightarrow L+2$ (2.16),
			$H \rightarrow L$ (3.15), $H \rightarrow L+1$ (2.12), $H \rightarrow L+2$ (3.29)
	3	3.7593	$H \rightarrow L+1 (70.79), H \rightarrow L+2 (11.47), H \rightarrow L+3 (6.31)$
	4	3.8350	H-7 \rightarrow L (2.11), H-6 \rightarrow L+2 (3.79), H-2 \rightarrow L (3.74), H-
	4		$1 \rightarrow L+1 (58.74), H-1 \rightarrow L+2 (3.69), H-1 \rightarrow L+3 (4.78)$
	5	3.9167	H-8→L (2.11), H-8→L+2 (2.21), H-6→L (18.14), H-
			6→L+2 (18.32), H-4→L+2 (2.28), H-2→L (9.85), H-
			$2 \rightarrow L+2 (5.91), H-1 \rightarrow L+1 (7.20), H \rightarrow L (2.03)$
Tn		6 4.1321	H-4 \rightarrow L (2.27), H-4 \rightarrow L+3 (3.48), H-2 \rightarrow L (4.98), H-
	6		$1 \rightarrow L$ (34.14), H-1 \rightarrow L+2 (11.43), H \rightarrow L (9.74), H \rightarrow L+1
			(2.35)
			$H-4 \rightarrow L$ (2.27), $H-4 \rightarrow L+3$ (3.48), $H-2 \rightarrow L$ (4.98), $H-2 \rightarrow L$
	7	4.1457	$1 \rightarrow L$ (34.14), H-1 \rightarrow L+2 (11.43), H \rightarrow L (9.74), H \rightarrow L+1
			(2.35)
			H-13→L (2.80), H-12→L (2.04), H-11→L (3.24), H-
	8	4.2457	$3 \rightarrow L$ (2.38), H-2 $\rightarrow L$ (33.57), H-2 $\rightarrow L$ +2 (4.62), H-1 $\rightarrow L$
			(19.67), H-1 \rightarrow L+2 (3.68)
			H-8→ L (3.39), H -7→ L (3.40), H -6→ L (2.50), H -6→ L +4
	9	9 4.3394	(2.01), H-3 \rightarrow L+4 (2.99), H-3 \rightarrow L+7 (2.96), H-2 \rightarrow L+1
			$(5.28), \text{H-2}\rightarrow\text{L+2} (2.41), \text{H-2}\rightarrow\text{L+3} (14.31), \text{H-2}\rightarrow\text{L+4}$
	10	4.3728	$H-13 \rightarrow L$ (14.33), $H-8 \rightarrow L$ (3.12), $H-8 \rightarrow L+2$ (3.53), $H-12 \rightarrow L+2$ (3.53), H-12 \rightarrow L+2

7	$L \to L (12.61), H-7 \to L+2 (2.26), H-3 \to L+4 (3.21) H-$
2	\rightarrow L+1 (2.50) H-2 \rightarrow L+2 (3.22), H-2 \rightarrow L+3 (4.02), H-
2	\rightarrow L+4 (2.17), H-2 \rightarrow L+5 (2.99), H \rightarrow L+5 (2.27),
H	$I \rightarrow L+6 (2.55)$

Table S6. The singlet and triplet excited state transition configurations of p-CZ-BYZ dimer revealed by TD-DFT calculations. The matched excited states that contain the same orbital transition components of S1 were highlighted in red.

	n th	Energy	Transition configuration
	11-111	(eV)	(%)
			H-21→L(4.05), H-20→L+1 (3.70), H-17→L+1 (14.55), H-
Sn	1	3.9831	17→L+5 (3.20), H-16→L+1 (13.16), H-16→L+4 (3.33), H-
			$15 \rightarrow L+1$ (6.34), H-14 $\rightarrow L$ (6.72), H-1 $\rightarrow L+1$ (4.25), H $\rightarrow L$ (4.26)
			H-17→L (3.80), H-16→L (3.79), H-4→L (2.44), H-3→L (2.61),
	1	3.2508	H-2 \rightarrow L (3.79), H-1 \rightarrow L (16.83), H-1 \rightarrow L+1 (6.78), H \rightarrow L (15.29),
			$H \rightarrow L+1 (6.33)$
			H-17→L+1 (3.77) H-16→L+1 (3.80) H-5→L+1 (2.39) H-
	2	3.2511	$3 \rightarrow L+1 (2.60) \text{ H-}2 \rightarrow L+1 (3.81) \text{ H-}1 \rightarrow L (6.72) \text{ H-}1 \rightarrow L+1$
			$(16.51) \text{ H} \rightarrow \text{L} (6.50) \text{ H} \rightarrow \text{L}+1 (15.52)$
			H-21→L (3.31), H-20→L (2.80), H-17→L (6.53), H-17→L+1 –
	3	3.6473	(2.12), H-16 \rightarrow L (5.66), H-16 \rightarrow L+1 (2.93), H-16 \rightarrow L+4 (2.23),
			H-15→L (7.70), H-15→L+1 (3.84), H-14→L (6.43)
			H-21→L+1 (3.22) H-20→L+1 (2.89) H-17→L (2.10) H-
		2 (475	$17 \rightarrow L+1 (6.53) \text{ H-16} \rightarrow L (2.93) \text{ H-16} \rightarrow L+1 (5.70) \text{ H-16} \rightarrow L+5$
	4	3.64/5	(2.19) H-15 \rightarrow L (2.94) H-15 \rightarrow L+1 (5.48) H-14 \rightarrow L (2.89) H-
			$14 \rightarrow L+1 (8.64)$
	5	3.7405	$H-1 \rightarrow L+2 (36.16) H-1 \rightarrow L+5 (3.33) H \rightarrow L+2 (18.46) H \rightarrow L+3$
			$(19.49) \text{ H} \rightarrow \text{L} + 4 (3.52) \text{ H} \rightarrow \text{L} + 6 (2.12)$
Tn	1	3.7408	$H_{-1} \rightarrow I + 3 (36 34) H_{-1} \rightarrow I + 4 (2 89) H \rightarrow I + 2 (18 91)$
	6		$\begin{bmatrix} 11 - 1 & -1 & -1 & -1 & -1 & -1 & -1 &$
			$H \rightarrow I + 3 (19 01) H \rightarrow I + 5 (3 99) H \rightarrow I + 7 -0 10548$
			H-4→L -0.10304 H-3→L+2 -0.32291 H-3→L+3
	7	3.8369	
			0.21705 H-2→L+2 0.36048 H-2→L+3 (2.23)
			H-17→L+5 (20.67), H-15→L+1 (2.45), H-3→L+2
	8	3 8373	
	Ŭ		(9.23), H-3 \rightarrow L+2 (20.85), H-2 \rightarrow L+2 (3.81), H-2 \rightarrow L+3
			(26, 26)
			$H-13 \rightarrow L$ (2,51) $H-13 \rightarrow L+4$ (2,10) $H-12 \rightarrow L$ (10,09) $H-12 \rightarrow L$
	9	9 3.9154	$12 \rightarrow I + 1$ (4 26) H-12 $\rightarrow I + 4$ (9 09) H-12 $\rightarrow I + 5$ (6 66)
			$H-4 \rightarrow L$ (5.47), $H-4 \rightarrow L+1$ (2.19), $H-4 \rightarrow L+4$ (2.89),

			$4 \rightarrow L+5 (2.20), H-3 \rightarrow L+2 (3.30), H-2 \rightarrow L+2 (3.28)$
	10 3.9157		H-13→L (4.09) H-13→L+1 (10.24) H-13→L+4 (6.92)
		3 0157	H-13→L+5 (8.85) H-12→L+1 (2.38) H-12→L+5 (2.23)
		5.7157	H-5→L (2.27) H-5→L+1 (5.40) H-5→L+4 (2.17) H-
			5→L+5 (2.9) H-3→L+3 (3.30) H-2→L+3 (3.30)