

**Electronic supplementary information**

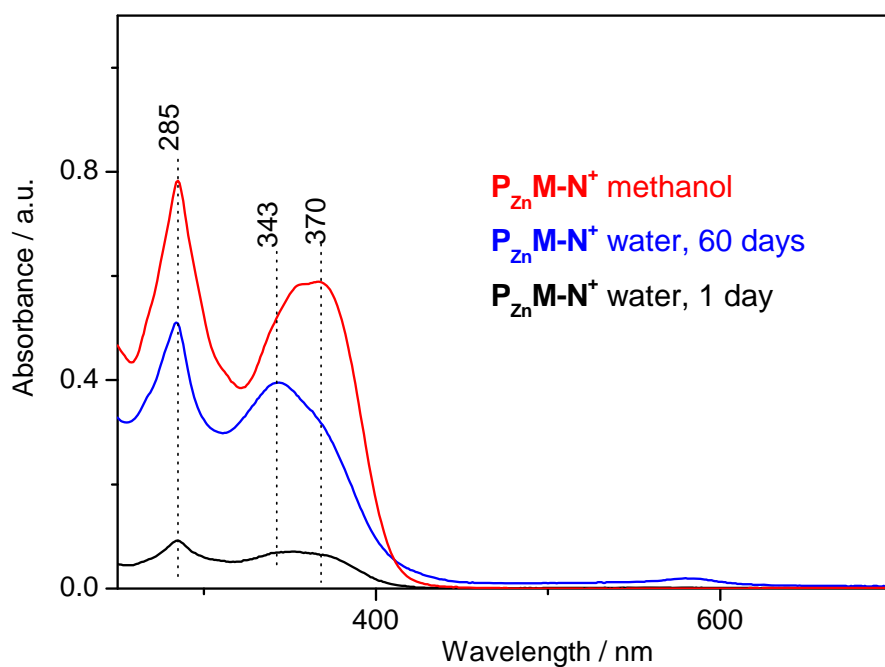
**Alcohol-soluble bis(*tpy*)oligothiophenes: new building units for constitutional dynamic conjugated polyelectrolytes**

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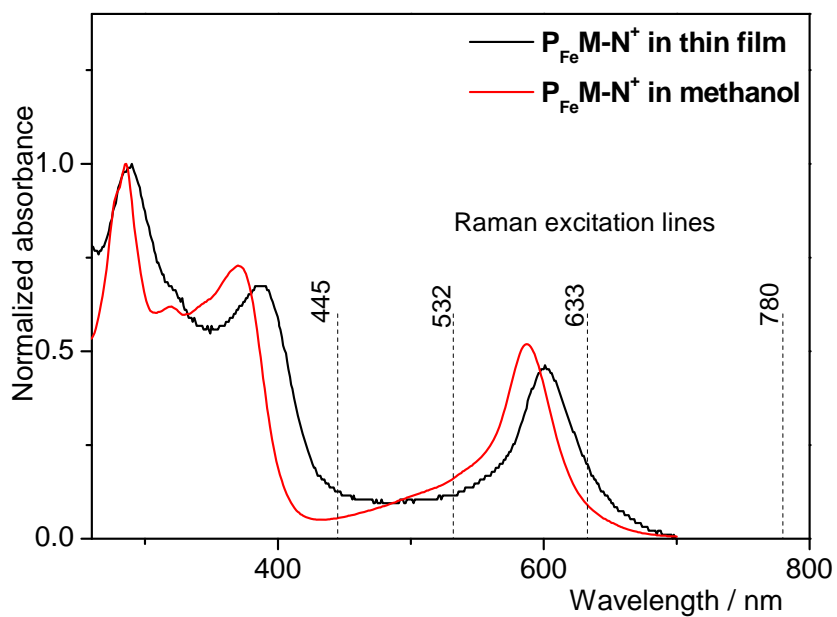
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**Figure S1:** Absorption spectra of  $P_{Zn}M-N^+$  in methanol and in water after 1 and 60 days of dissolving.



**Figure S2:** Normalized absorption spectra of  $P_{Fe}M-N^+$  in solution and in thin film and position of Raman excitation lines.

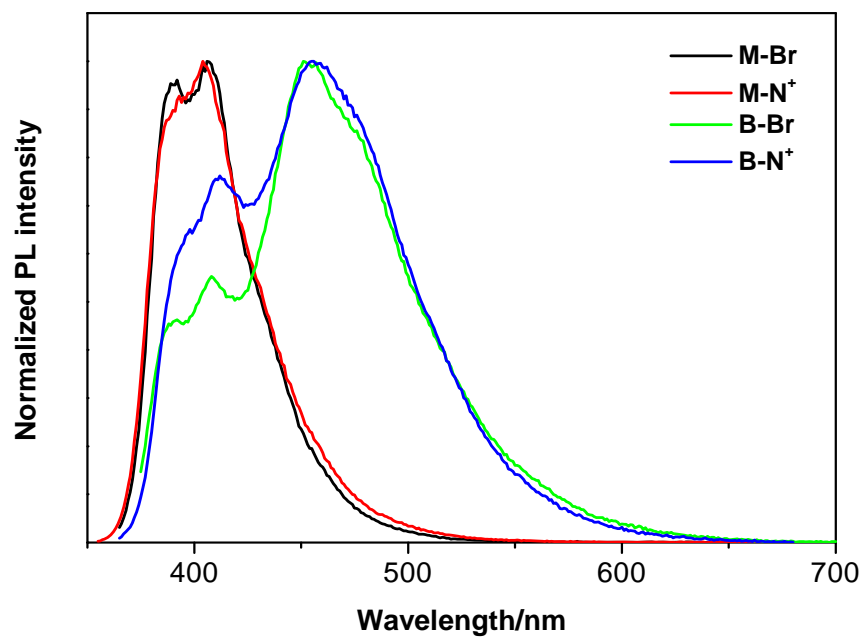


Figure S3: Normalized photoluminescence spectra of unimers in solution.

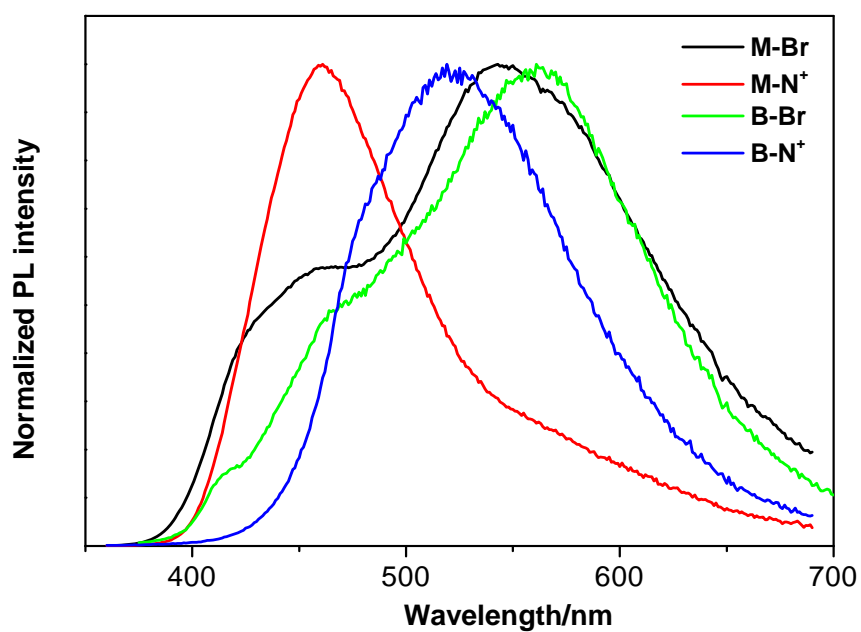
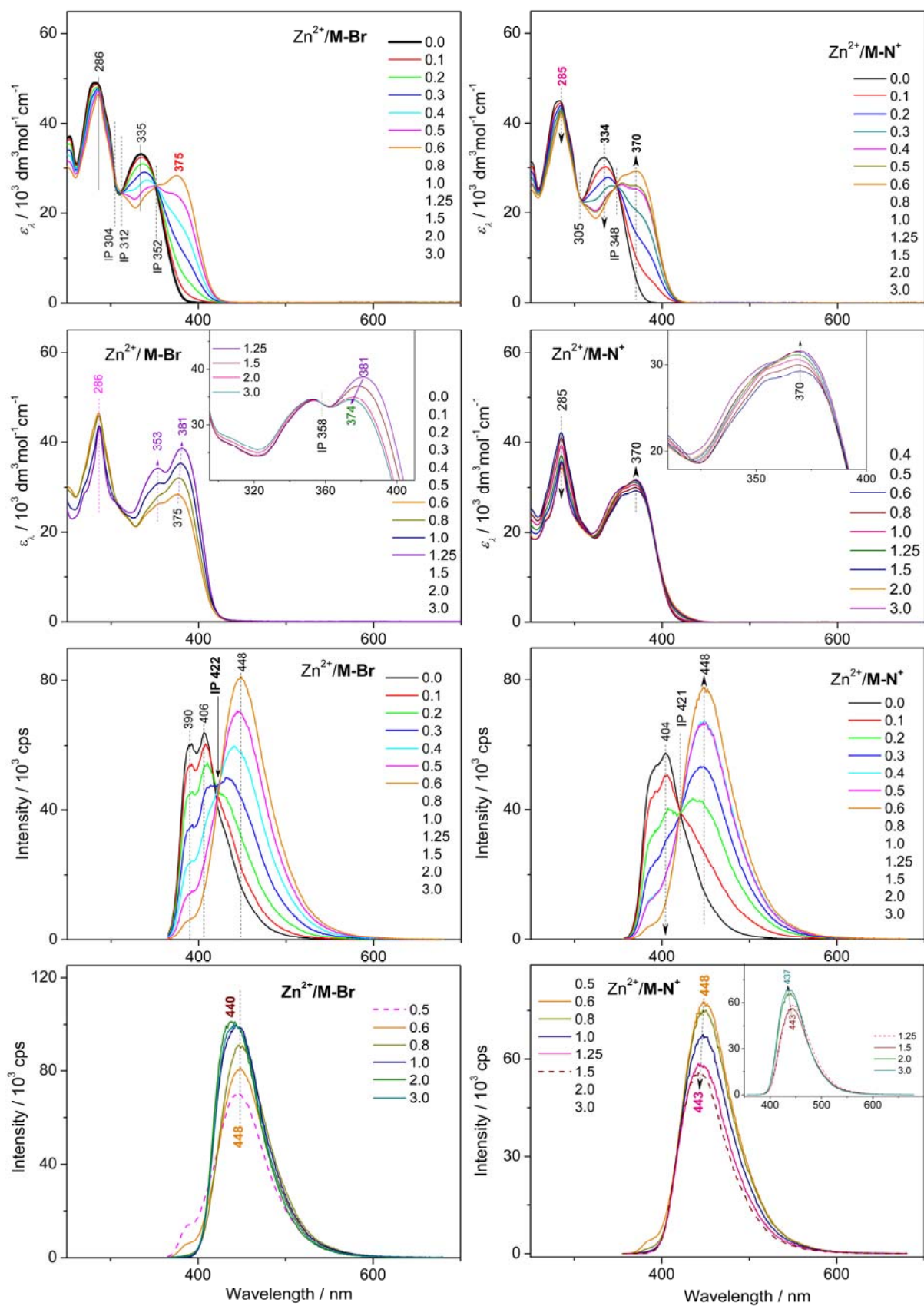
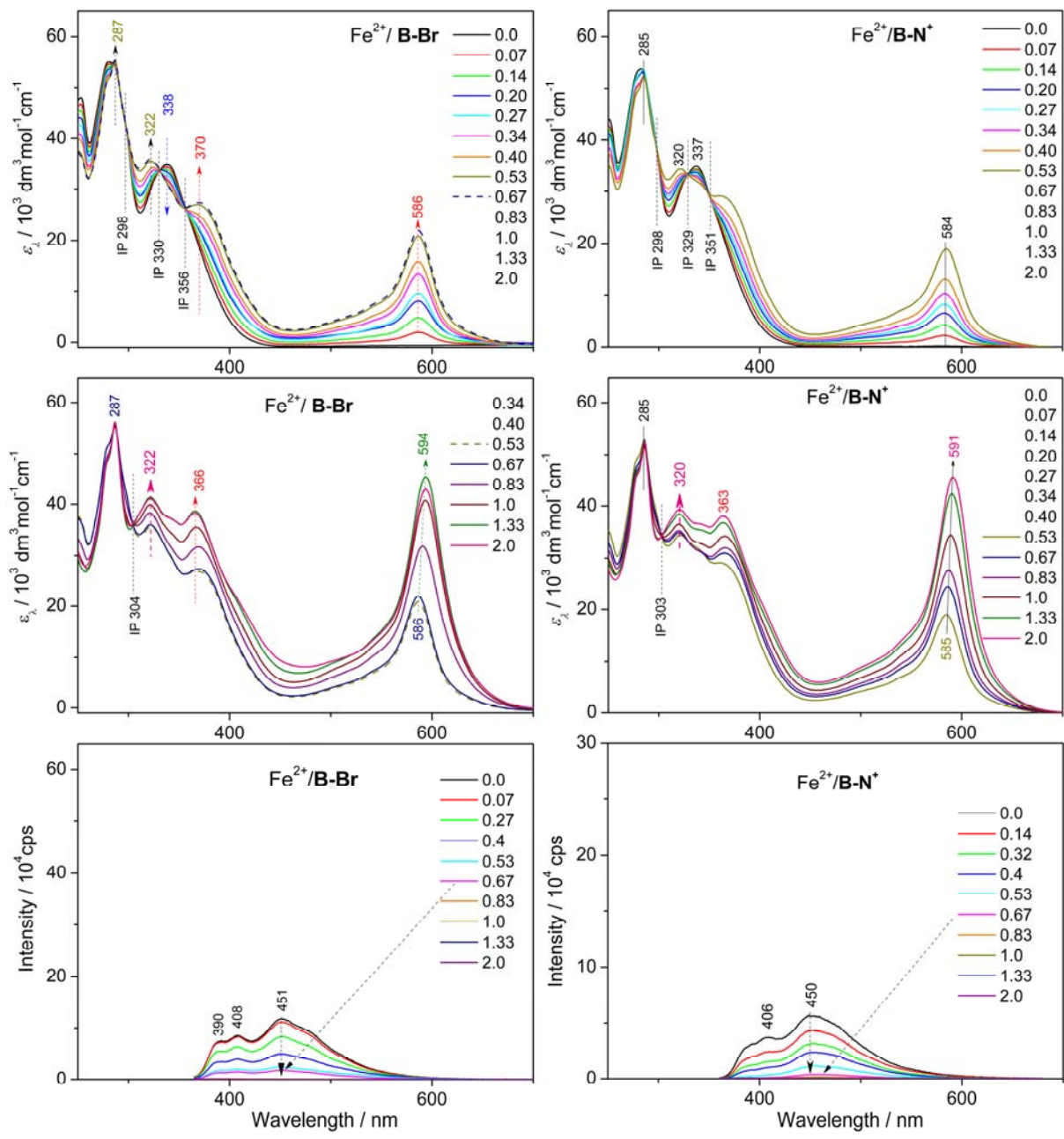


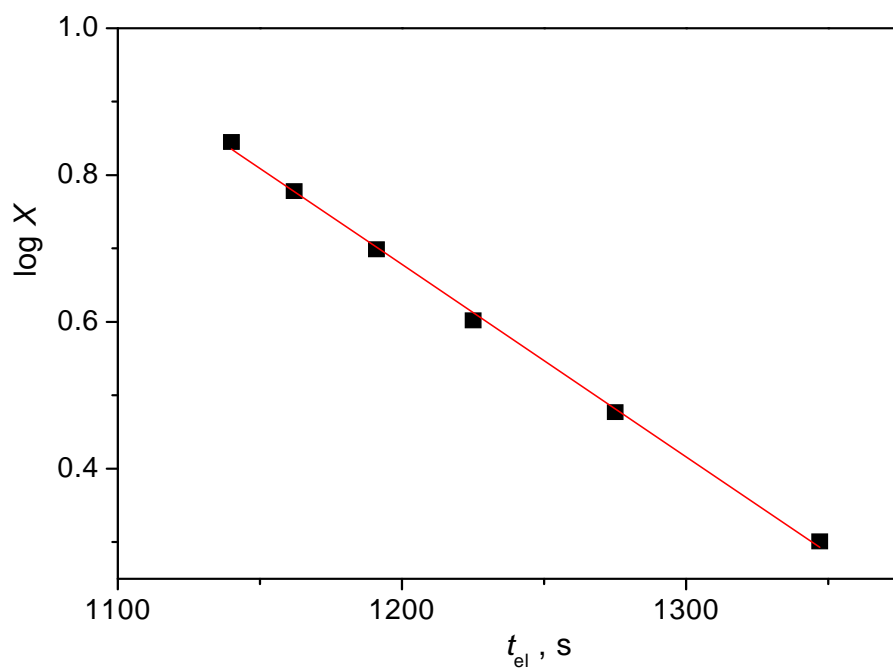
Figure S4: Normalized photoluminescence spectra of unimers in thin film.



**Figure S5:** Changes in UV/vis and photoluminescence spectra accompanied titrations of **M-Br** (left) and **M-N<sup>+</sup>** (right) unimers with **Zn<sup>2+</sup>** ions. Initial unimer concentration  $2 \cdot 10^{-5}$  mol·dm<sup>-3</sup>; chloroform/acetonitrile (**Br**-unimers), methanol (**N<sup>+</sup>**-unimers), room temperature.



**Figure S6:** Changes in UV/vis and photoluminescence spectra accompanied titrations of **B-Br** (left) and **B-N<sup>+</sup>** (right) unimers with  $\text{Fe}^{2+}$  ions. Initial unimer concentration  $2 \cdot 10^{-5} \text{ mol} \cdot \text{dm}^{-3}$ ; chloroform/acetonitrile (**Br**-unimers), methanol (**N<sup>+</sup>**-unimers), room temperature.



**Figure S7:** Dependence of the degree of polymerization,  $X$ , of **P<sub>Fe</sub>M-Br** on the elution time,  $t_{el}$ .

**Table S1:** The photoluminescence maxima,  $\lambda_F$ , in solution and in thin film, photoluminescence quantum yield,  $\phi$ , and lifetime of excited states,  $\tau$ .

Sample	Luminescence			
	$\lambda_F$ , nm ( $\phi$ , %)		$\tau$ , ps	
	solution	film	solution	film
<b><i>Unimers</i></b>				
<b>M-Br</b>	406 (3 %)	543 (7 %)	186 (6%)	777 (55%)
			593 (94%)	136 (27%) 3520 (18%)
<b>M-N<sup>+</sup></b>	404 (5 %)	461 (4 %)	122 (6%)	450 (22%)
			581 (6%)	1550 (57%) 3780 (21%)
<b>B-Br</b>	452 (5 %)	561 (3 %)	428 (20%)	1800 (60%)
			51 (71%)	426 (16%)
			965 (9%)	5050 (24%)
<b>B-N<sup>+</sup></b>	450 (5 %)	519 (3 %)	390 (19%)	912 (50%)
			35(71%)	218 (32%)
			886 (10%)	3280 (18%)
<b><i>Zn-dynamers</i></b>				
<b>P<sub>Zn</sub>M-Br</b>	440	460 (1 %)		119 (47%)
				542 (42%)
				1950 (11%)
<b>P<sub>Zn</sub>M-N<sup>+</sup></b>	444	473 (4 %)		481 (33%)
				82 (54%)
				1660 (13%)
<b>P<sub>Zn</sub>B-Br</b>	550	525 (3 %)		866 (54%)
				195 (33%)
				3380 (13%)
<b>P<sub>Zn</sub>B-N<sup>+</sup></b>	550	538 (3 %)		192 (55%)
				616 (49%)
				2310 (6%)