## Supporting information.

Table S-1. Dependence of D-A distances ( $\AA$ ) on the DP's of heterotactic polystyrene macrocycles containing a 9,10anthracenylide unit separated from the two DMF units by arms of equal lengths.

| DP | Distance | DP | Distance |
| ---: | ---: | ---: | ---: |
| 0 | 8.13 | 16 | 22.31 |
| 2 | 8.83 | 18 | 23.35 |
| 4 | 10.94 | 20 | 26.04 |
| 6 | 12.69 | 22 | 28.03 |
| 8 | 14.31 | 24 | 31.45 |
| 10 | 16.49 | 26 | 32.21 |
| 12 | 17.91 | 28 | 35.38 |
| 14 | $\mathbf{2 1 . 1 0}$ | 30 | 37.23 |

Table S-2. D-A distance ( $\AA$ ) from two different donors to the acceptor in asymmetric 12-, $14-, 16$ - and 18 -mers as a function of the shorter arm lengths.

| DP | $12-\mathrm{mer}$ | DP | $14-\mathrm{mer}$ | DP | $16-\mathrm{mer}$ | DP | $18-\mathrm{mer}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | $6.42,11.25$ | 1 | $6.51,11.48$ | 1 | $8.60,13.30$ | 1 | $6.39,12.05$ |
| 2 | $8.61,12.85$ | 2 | $8.05,12.30$ | 2 | $7.93,12.83$ | 2 | $9.83,13.69$ |
| 3 | $10.40,14.11$ | 3 | $11.01,14 . .68$ | 3 | $9.93,15.41$ | 3 | $11.00,14.88$ |
| 4 | $13.91,16.00$ | 4 | $12.74,16.38$ | 4 | $12.20,16.90$ | 4 | $12.04,17.96$ |
| 5 | $15.12,17.48$ | 5 | $14.41,17.80$ | 5 | $15.27,19.48$ | 5 | $14.20,19.87$ |
| 6 | $16.59,18.47$ | 6 | $17.50,19.26$ | 6 | $17.25,21.50$ | 6 | $16.40,20.76$ |
|  |  | 7 | $19.98,20.00$ | 7 | $18.42,21.92$ | 7 | $18.57,21.59$ |
|  |  |  |  | 8 | $19.25,20.05$ | 8 | $20.26,22.69$ |
|  |  |  |  |  |  | 9 | $21.27,22.49$ |



Figure $\mathbf{S 1}$. Bubble plot of $E T R_{i /(j-i)}$ as function of number of S units in the $\mathrm{DP}_{\mathrm{n}}=18$ cycle population and number of $S$ units in the shorter arms.


Figure S2. Bubble plot of $E T R_{i /(j i)}$ with a $\mathrm{DP}_{\mathrm{n}}$ of 28 . Data are used from the linear fit equations in Figures 8a and 8b.


Figure S3. Bubble plot of $E T R_{i /(j i)}$ with a $\mathrm{DP}_{\mathrm{n}}$ of 54 . Data are used from the linear fit equations in Figures 8a and 8b.


Figure S-4. Flow chart of Monte Carlo simulation

