# Catalyst-Free Click Polymerization of Thiol and Activated Internal Alkynes: A Facile Strategy toward Functional Poly( $\beta$-thioacrylate)s 



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Scheme S1. Synthetic route to monomers 2a-c.


Figure S1. IR spectra of monomers $\mathbf{2 b}(\mathrm{A})$ and $\mathbf{1}(\mathrm{B})$ and their polymer P1/2b (C).


Figure S2. IR spectra of monomers 2c (A) and $\mathbf{1}$ (B) and their polymer P1/2c (C).


Figure S3. IR spectra of monomers $\mathbf{3 a}(\mathrm{A})$ and $\mathbf{1}(\mathrm{B})$ and their polymer P1/3a (C).


Figure S4. IR spectra of monomers $\mathbf{3 b}(\mathrm{A})$ and $\mathbf{1}(\mathrm{B})$ and their polymer P1/3b (C).


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Figure S7. ${ }^{1} \mathrm{H}$ NMR spectra of monomers $\mathbf{2 c}(\mathrm{A})$ and $\mathbf{1}(\mathrm{B})$ and their polymer $\mathrm{P} \mathbf{1} / \mathbf{2 c}(\mathrm{C})$ in $\mathrm{CDCl}_{3}$. The solvent and water peaks are marked with asterisks.


Figure S8. ${ }^{1} \mathrm{H}$ NMR spectra of monomers $\mathbf{3 a}(\mathrm{A})$ and $\mathbf{1}(\mathrm{B})$ and their polymer $\mathrm{P} \mathbf{1} / \mathbf{3 a}(\mathrm{C})$ in $\mathrm{CDCl}_{3}$. The solvent and water peaks are marked with asterisks.


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Figure S16. DSC curves of $\mathrm{P} \mathbf{1 / 2 a}-\mathbf{c}$ and $\mathrm{P} 1 / \mathbf{3 a}-\mathbf{c}$ measured under nitrogen at a scanning rate of 2 ${ }^{\circ} \mathrm{C} / \mathrm{min}$.

Table S1. Refractive indices, Abbé numbers and chromatic dispersions of thin films of the PTAs ${ }^{a}$

| PTA | $n_{400-1700}$ | $n_{632.8}$ | $n_{1550}$ | $v_{\mathrm{D}}$ | $v_{\mathrm{D}}{ }^{\prime}$ | $D$ | $D^{\prime}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| P1/2a | $1.7638-1.6304$ | 1.6742 | 1.6318 | 15.9 | 69.0 | 0.063 | 0.014 |
| P1/2b | $1.8174-1.6574$ | 1.6915 | 1.6581 | 12.8 | 126.9 | 0.078 | 0.008 |
| P1/2c | $1.8316-1.6862$ | 1.7216 | 1.6870 | 15.6 | 114.8 | 0.064 | 0.009 |
| P1/3a | $1.7845-1.6496$ | 1.6840 | 1.6505 | 15.8 | 110.6 | 0.063 | 0.009 |
| P1/3b | $1.8169-1.6654$ | 1.7006 | 1.6662 | 14.6 | 117.2 | 0.068 | 0.009 |
| P1/3c | $1.8334-1.6761$ | 1.7098 | 1.6768 | 14.3 | 135.7 | 0.070 | 0.007 |

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[^0]:    ${ }^{a}$ Abbreviations: $n=$ refractive index, $v \mathrm{D}=$ Abbé number, $v_{\mathrm{D}}{ }^{\prime}=$ modified Abbé number, $D=$ chromatic dispersion in the visible region, and $D^{\prime}=$ chromatic dispersion in the IR region.

