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Colorimetric Detection of Anions in Aqueous Solution Using Poly(phenylacetylene) with Sulfonamide Receptors Activated by Electron-Withdrawing Group
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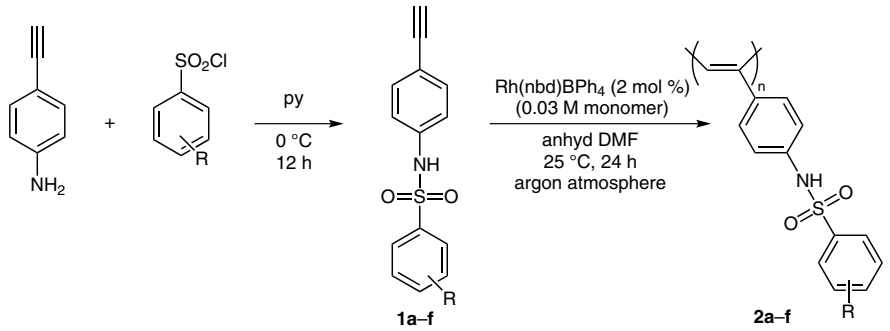
Poly(phenylacetylene)s with Pendant Sulfonamide Receptors for Anion Detection



	R	Yield
1a	H	90%
1b	4-O_2N	87%
1c	3,5-$(CF_3)_2$	92%
1d	4-Me	95%
1e	4-*t*-Bu	88%
1f	4-OMe	72%

	R	Yield	Mn × 10^{-5}	PDI
2a	H	86%	0.9	1.97
2b	4-O_2N	68%	4.77	5.65
2c	3,5-$(CF_3)_2$	84%	2.44	3.54
2d	4-Me	85%	2.91	2.57
2e	4-*t*-Bu	81%	1.2	3.33
2f	4-OMe	82%	1.64	4.99

Significance: Development of colorimetric sensors capable of detecting anions in aqueous medium is of great interest. In this paper, the authors describe the synthesis of a series of poly(phenylacetylene)s baring pendant sulfonamide side chains. The sulfonamide moiety is demonstrated to act as an anion receptor via a deprotonation mechanism, allowing sensing of anions in aqueous environment.

Comment: In this paper, the authors report a two-step protocol leading to a series of poly(phenylacetylene)s containing pendant sulfonamide moieties with electron-withdrawing or electron-donating substituents (**2a**–**f**). The obtained polymers showed varied PDIs (see Table above) in agreement with known rhodium-catalyzed polymerizations of acetylenes. They furthermore demonstrate the utility of these polymers as anion sensors. **2b** showed clear red-shifted absorption upon addition of fluoride in mixed solvents with 20% water content.

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