

Poly[styrene(iodosodiacetate)]: An Efficient Reagent for Regioselective Azido-arylselenylation of Olefins

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Abstract: Poly[styrene(iodosodiacetate)] reacted with diaryl diselenides, followed by sodium azide, giving 1-azido-2-arylselenoalkanes regioselectively. The polymer reagent could be regenerated and reused.

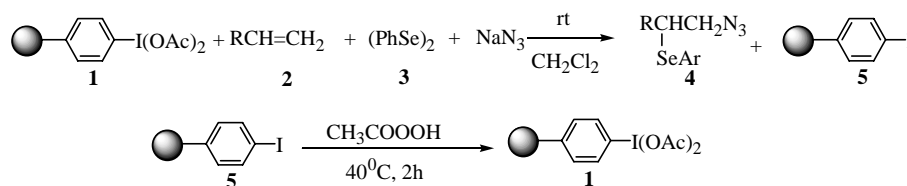
Keywords: Poly[styrene(iodosodiacetate)], regioselectivity, azido-arylselenylation.

Polymer-supported organic reagents have been rapidly applied to the preparation of small organic molecules¹. Recently, polymer-supported hypervalent iodine reagents are increasingly used in organic synthesis with their versatile reactivities. Among them, Poly[styrene(iodosodiacetate)] is most widely used as a mild and clean oxidant².

1-Azido-2-arylselenoalkanes are very important intermediates in organic synthesis³. Here we report a novel solid synthesis of 1-azido-2-arylselenoalkanes with outstanding advantages of easy operations, high regioselectivities and environmental benign characteristics compared with the same reaction carried out in solution conditions³.

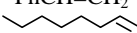
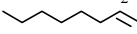
The azido-arylselenylation reactions were simply carried out by stirring a mixture of resin **1** (1.2 mmol) with diaryl diselenides (0.3 mmol), sodium azide (1.2 mmol), and terminal olefins (0.5 mmol) in methylene chloride at room temperature (**Scheme 1**). 1-Azido-2-arylselenoalkanes was obtained regioselectively and the reaction yields are summarized in **Table 1**. A mixture of geometric isomers (yield: 82%, *cis* / *trans* = 3.5/1) were obtained when cyclohexene was used (**Scheme 2**). Resin **1** could be regenerated and reused⁴.

Scheme 1

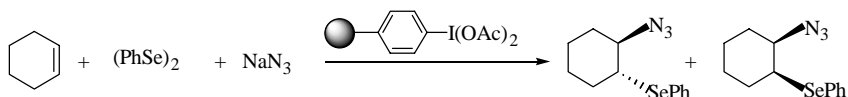


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Table 1 Azido-arylselenenylation of olefins

Products	Substrate 2	Substrate 3	Time(h)	Yield (%) ^a
4a	PhCH=CH ₂	(PhSe) ₂	3	79
4b		(PhSe) ₂	2.5	75
4c	CH ₃ C(O)CH ₂ CH ₂ CH=CH ₂	(PhSe) ₂	3	70
4d	PhCH=CH ₂	(4-ClC ₆ H ₄ Se) ₂	2	81
4e		(4-ClC ₆ H ₄ Se) ₂	2.5	73
4f	CH ₃ C(O)CH ₂ CH ₂ CH=CH ₂	(4-ClC ₆ H ₄ Se) ₂	2.5	68
4a^b	PhCH=CH ₂	(PhSe) ₂	3	78

a. Isolated yields. b. Using regenerated resin **1**.

Scheme 2

We have developed a novel method to prepare 1-azido-2-arylselenoalkanes with poly[styrene(iodosodiacetate)]. The reaction is easy operated and environmental benign. And also poly[styrene(iodosodiacetate)] can be regenerated and reused.

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