

MACROINITIATORS FOR ATOM TRANSFER RADICAL POLYMERIZATION (ATRP)

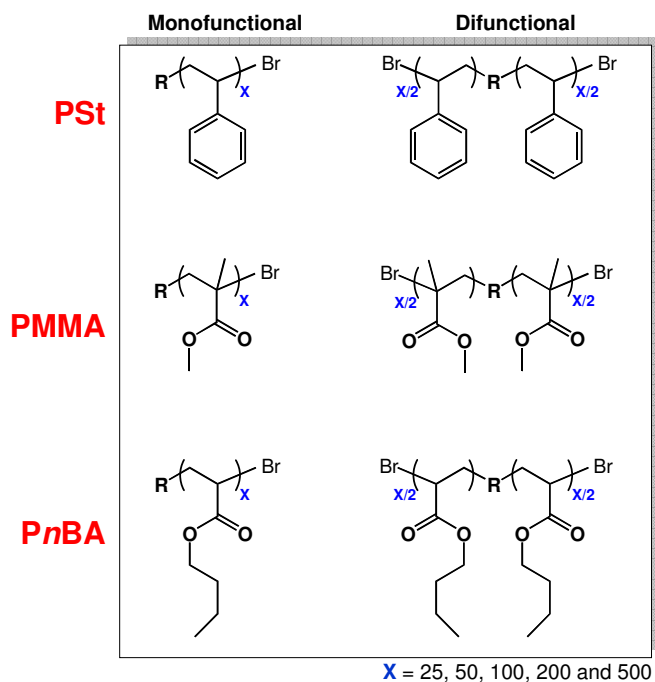
Macroinitiators: **PSt**, **PMMA**, **PnBA**

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Product Description

Block copolymers and their unique properties have attracted the interest of R&D scientists across broad market segments. Block copolymers are expected to play a significant role in improving the performance of tomorrow's commercial products.

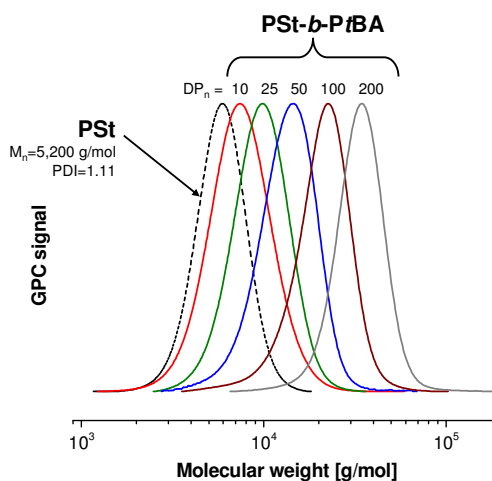
ATRP Solutions, Inc. is happy to offer macroinitiators, which can be used for the preparation of various block copolymers. In our offer you can find three different macroinitiators: polystyrene (**PSt**), poly(methyl methacrylate) (**PMMA**) and poly(*n*-butyl acrylate) (**PnBA**). Each macroinitiator has narrow molecular weight distribution (PDI<1.3), high chain-end functionality and is offered with five different degrees of polymerization (25, 50, 100, 200 and 500) and one or two bromine end-groups.



Example of use:

Extension of PSt with *t*-butyl acrylate:

All of the **PSt**, **PMMA** and **PnBA** may be used as macroinitiators in the polymerization of styrenes, acrylates and methacrylates via ATRP. As an example, **PSt** macroinitiator was extended with different amounts of *t*-butyl acrylate (*t*BA) generating set of block copolymers PSt-*b*-P*t*BA with various molecular weights and compositions (polymeric library). The figure below shows GPC traces of all synthesized copolymers from **PSt** macroinitiator with $DP_n = 50$. In all cases, a smooth shift of the entire molecular weight distribution towards higher molecular weights was observed. These results prove that **PSt** macroinitiator has high chain-end functionality. Polymeric systematic libraries are also available from ATRP Solutions and full information is available online.



General polymerization conditions for ARGET ATRP of *t*BA:
[*t*BA]₀ / [PSt]₀ / [CuBr₂]₀ / [TPMA]₀ / [Sn(EH)₂]₀ = 75 / 1 / 0.004 / 0.05 / 0.05
T = 60 °C; in anisole (50 vol% versus *t*BA)

Suggestion for Other Applications

PSt, PMMA and PnBA macroinitiators, due to the high degree of chain-end functionality, may be used for the preparation of functional polymers. This can be achieved by the transformation of halogen end groups to other functionalities using nucleophilic substitution reactions or electrophilic addition reactions (Coessens, V.; Pintauer, T.; Matyjaszewski, K. *Prog. Polym. Sci.* **2001**, *26*, 337)

For Technical and Ordering Information

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Catalog# FI-2548


MACROINITIATORS

Pricing

Macroinitiator	Monofunctional		Difunctional	
	50 g	100 g	50 g	100 g
PSt	\$525	\$899	\$1099	\$1799
PMMA	\$449	\$799	\$1199	\$1999
PnBA	\$749	\$1149	\$999	\$1899

Degree of polymerization = 25, 50, 100, 200 or 500

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Macroinitiators

Sample Page from 2009 Spring Catalog

Helpful references

ATRP and synthesis of block copolymers: a) Davis, K. A.; Matyjaszewski, K. *Adv. Polym. Sci.* **2002**, *159*, 2; b) Wang, J.-L.; Grimaud, T.; Shipp, D. A.; Matyjaszewski, K. *Macromolecules* **1998**, *31*, 1527.

ARGET / ICAR ATRP and synthesis of block copolymers: a) Matyjaszewski, K.; Jakubowski, W.; Min, K.; Tang, W.; Huang, J.; Braunecker, W. A.; Tsarevsky, N. V., *Proc. Nat. Acad. Sci. U.S.A.* **2006**, *103*, 15309; b) Jakubowski, W.; Matyjaszewski, K., *Angew. Chem. Intl. Ed.* **2006**, *45*, 4482; c) Mueller, L.; Jakubowski, W.; Tang, W.; Matyjaszewski, K. *Macromolecules* **2007**, *40*, 6464.

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Catalog and Brochure for 2009 Spring are available online. Use 'Build Your Own Polymer' online service to order custom made polymer samples or just order ATRP initiators, macroinitiators or ligands.