

# Conformation and thermo-responsive properties of polymethacrylate molecular brushes with oligo(ethylene glycol)-block-oligo(propylene glycol) side chains and homopolymer

M.A. Simonova<sup>1</sup>, M.I. Nepomnyashaya<sup>2</sup>, V.V. Leshan<sup>2</sup>, M.D Zelentsov<sup>2</sup>

D.M. Kamorin<sup>3,4</sup>, O.A Kazantsev<sup>3, 4</sup>

<sup>1</sup>Institute of Macromolecular Compounds, RAS, St. Petersburg, Russia,

<sup>2</sup>Higher School of Technology and Energy, Saint Petersburg, Russia,

<sup>3</sup>Nizhny cNovgorod State Technical University named after R.E. Alekseev, Nizhny Novgorod, Russia,

<sup>4</sup>Department of Organic Chemistry, Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia

e-mail: [mariasimonova1983@mail.ru](mailto:mariasimonova1983@mail.ru)

Polymer micelles formed by amphiphilic block copolymers, brushes with side chains of block structure form stable monomolecular micelles of cylindrical shape which do not break up under very strong dilution. The synthesis of polymer molecular brushes based on five novel diblock macromonomers (methoxy [oligo(ethylene glycol) e - block -oligo(propylene glycol) p ] methacrylates, OEG e OPG p MA) with different lengths of oligo(ethylene glycol) (e) and oligo(propylene glycol) (p) moieties. e = 7.0, p= 10.3 (E7P10), and brushes E7P10-DMAPMA differenced by composition has been studied.

Samples	$dn/dc$ cm <sup>3</sup> /g	$M_w \times 10^{-3}$ g mol <sup>-1</sup>	$R_{h-D}$ nm	$[\eta]$ cm <sup>3</sup> /g	$k'$	$R_{h-f}$ nm	$R_{h-\eta}$ nm	$A_0$
E7P10	0.225	49	4.3			4.5	-	3.2
	0.035	54	4.2	12	0.55	4.5	4.3	3.2
E7P10-DMAPMA 80:20	0.168	65	5.9	-	-	4.2		
	0.05	69	3	14.4	1.12		5.4	3.1
E7P10-DMAPMA 90:10	0.121	80	5	-	-	4.8	-	-
	0.041	80	3-5	14.5	0.97		5.8-	3.2
E7P10-DMAPMA 95:5	0.134	87	4.7	-	-	4.2	-	
	0.04	70	5	15.9	0.88	4.2	5.6	3.2

Conclusions: Conformation of copolymers was close to coil in good solvent. The polymers have a critical solution temperature in the range from 34 to 71°C.

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