a)

b)

c)

Fig. 1. Effect of SW/V_{tot} ratio on the synthesis of glucose-based star polymers shown as: a) current profile, b) first order plot of current, c) first order kinetic plot of monomer conversion

In this case R_p is defined as [39]:

$$R_p = k_p[M][P_n^\bullet] = k_p[M]\sqrt{\frac{[X\text{-}Cu^{II}/L]\,k_{red}^{app}}{k_t}} \qquad (2)$$

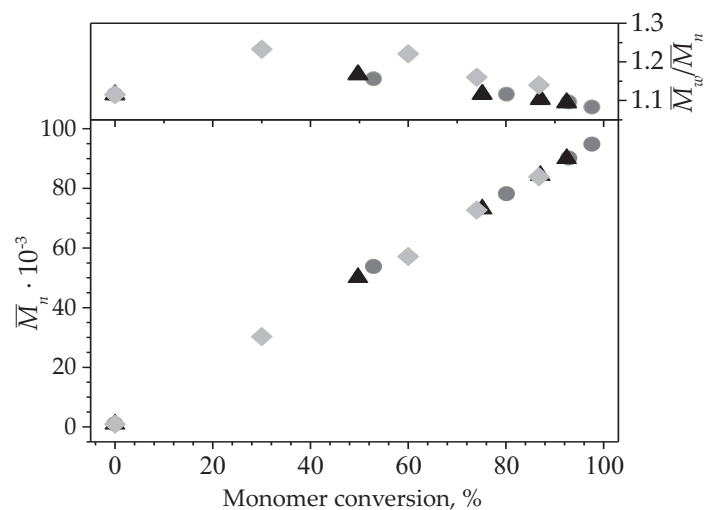where: $[P_n^\bullet]$ – concentration of propagating radicals.

Fig. 2. Effect of SW/V_{tot} ratio on evolution of $\overline{M}_n$ and $\overline{M}_w/\overline{M}_n$ versus monomer conversion during the synthesis of glucose-based star polymers
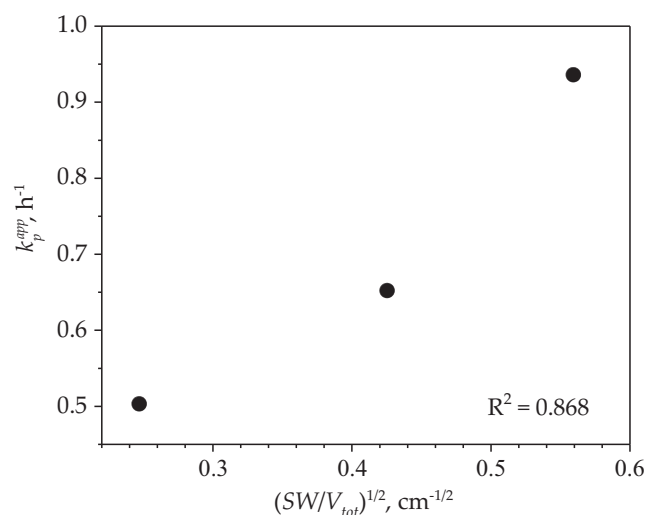

Fig. 3. Effect of SW/V_{tot} ratio on apparent polymerization rate coefficient (k_p^{app})

The reduction of deactivator rate constant can be presented as [38]:

$$k_{red}^{app} = \left(\frac{SW}{V_{tot}}\right)\sqrt{\frac{D_o}{\pi}} \qquad (3)$$

The k_p^{app} is proportional to the root of the reduction rate constant [$k_{red}^{app} = \ln(I_0/I_t)$] [40] and, based on eq. (3), k_p^{app} is proportional to the square root of SW/V_{tot}.

The polymerization kinetics and linear molecular mass evolution with monomer conversion, illustrated in Fig. 1c and Fig. 2, result in polymers with low $\overline{M}_w/\overline{M}_n$ values (Fig. 4a–c). Furthermore, $\overline{M}_w/\overline{M}_n$ were dependent on SW, but still remained low, *i.e.*, 1.14 at 87 % of monomer conversion ($SW/V_{tot} = 0.06$ cm^{-1}) (Fig. 4c).