## Supplementary Materials: Solution polymerization of acrylic acid initiated by redox couple Na-PS/Na-MBS: kinetic model and transition to continuous process

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Table S1. PAA standards used for the calibration of GPC. Peak molecular weight and polydispersity.



**Figure S1.** Fitting test SBR1: (**a**) weight-average degree of polymerization ( $DP_w$ ) and polydispersity (D) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S2.** Fitting test SBR2: (**a**) weight-average degree of polymerization ( $DP_w$ ) and polydispersity ( $\oplus$ ) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S3.** Fitting test SBR3: (**a**) weight-average degree of polymerization ( $DP_w$ ) and polydispersity ( $\oplus$ ) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S4.** Fitting test SBR4: (**a**) weight-average degree of polymerization ( $DP_w$ ) and polydispersity ( $\oplus$ ) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S5.** Fitting test SBR5: (**a**) weight-average degree of polymerization ( $DP_w$ ) and polydispersity ( $\Theta$ ) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S6.** Test SBR6: (a) weight-average degree of polymerization  $(DP_w)$  and polydispersity (D) as a function of the monomer overall conversion; (b) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S7.** Test SBR7: (a) weight-average degree of polymerization  $(DP_w)$  and polydispersity (D) as a function of the monomer overall conversion; (b) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S8.** Test SBR8: (**a**) weight-average degree of polymerization  $(DP_w)$  and polydispersity (Đ) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S9.** Test SBR9: (**a**) weight-average degree of polymerization ( $DP_w$ ) and polydispersity (D) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S10.** Test SBR10: (a) weight-average degree of polymerization  $(DP_w)$  and polydispersity ( $\oplus$ ) as a function of the monomer overall conversion; (b) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S11.** Test SBR11: (**a**) weight-average degree of polymerization  $(DP_w)$  and polydispersity (Đ) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S12.** Test SBR12: (a) weight-average degree of polymerization  $(DP_w)$  and polydispersity ( $\oplus$ ) as a function of the monomer overall conversion; (b) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S13.** Test SBR13: (a) weight-average degree of polymerization ( $DP_w$ ) and polydispersity ( $\Theta$ ) as a function of the monomer overall conversion; (b) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S14**. Test SBR14: (**a**)weight-average degree of polymerization ( $DP_w$ ) and polydispersity ( $\oplus$ ) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S15.** Test SBR15: (**a**) weight-average degree of polymerization  $(DP_w)$  and polydispersity (Đ) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S16**. Test SBR16: (**a**) weight-average degree of polymerization ( $DP_w$ ) and polydispersity (D) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.



**Figure S17.** Test SBR17: (**a**) weight-average degree of polymerization ( $DP_w$ ) and polydispersity (D) as a function of the monomer overall conversion; (**b**) instantaneous conversion as a function of time. Curves: model results; symbols: experimental data.