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Segregation and chain extension of overlapping semiflexible macromolecules in channel PETER CIFRA, DUSAN RACKO, Polymer Institute, Slovak Academy of Sciences, Dúbravská cesta 9, 845 41 Bratislava, Slovakia — Decrease of overall chain extension in channel by local backfolding together with an increased extension of sequences running parallel have been reported to complicate linearization experiments under moderate confinements. Less known related effect occurs in two overlapping chains in channel. Investigation of overlap and segregation of polymer coils in channel was extended here relative to previous studies from flexible to semiflexible chains. Results are based on simulation of confinement free energy of a chain and on direct simulation of coil segregation process. For confinement free energy we confirm the predicted opposite trend with increasing chain stiffness for the weak and strong confinement regimes. Results of two different approaches are consistent, in agreement with theoretical analysis and indicate a stronger segregation tendency of flexible chains relative to semiflexible chains, both in its extent and dynamics. Mutual excluded volume between confined chains leads to extension of overlapping chains along channel and this effect is stronger for flexible chains but weak for stiffer macromolecules such as DNA. Support from Slovak Res. and Develop. Agency (SRDA-0451-11) is acknowledged. D. Racko, P. Cifra, J. Chem. Phys. 138, 184904 (2013)

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