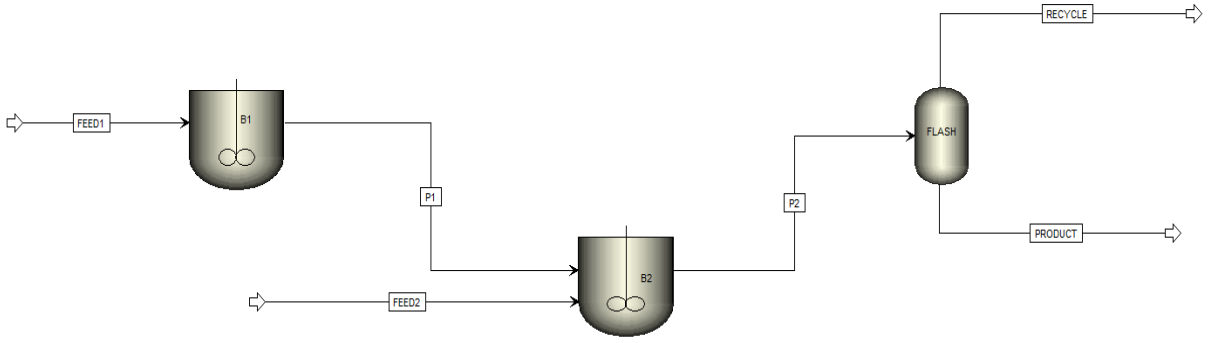
ASSIGNMENT – 7
ROLL NO – 234107206

1.

Flowsheet :-

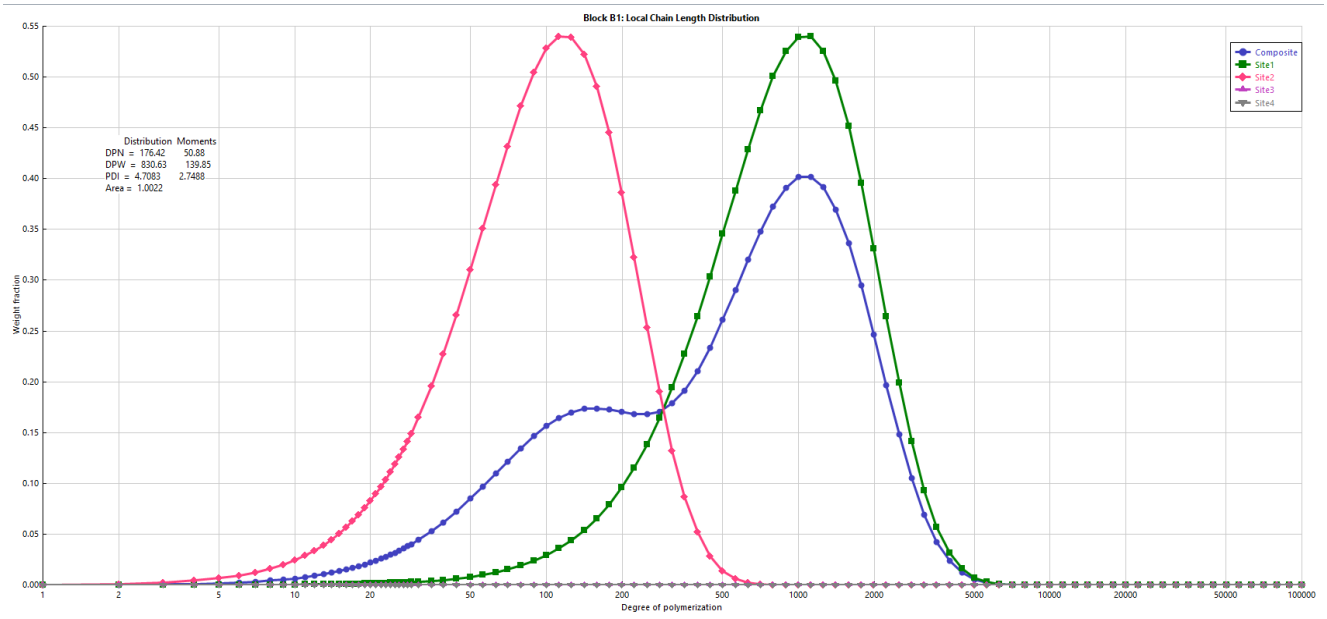


Stream Result :-

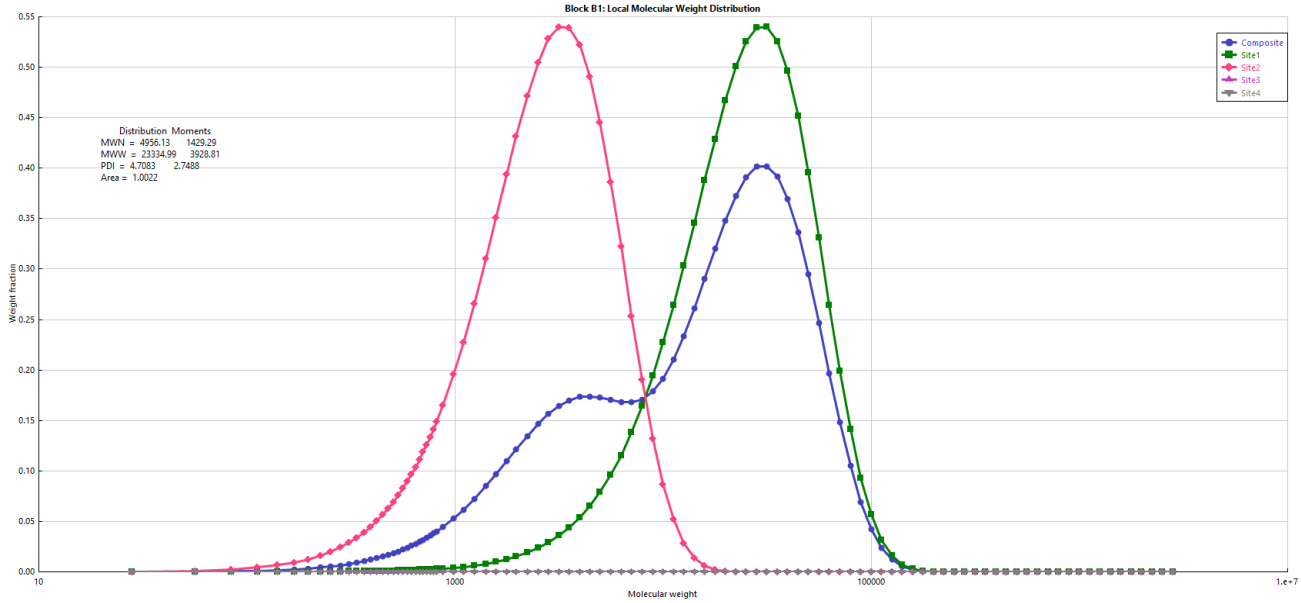
	Units	FEED1	FEED2	P1	P2	PRODUCT	RECYCLE
Phase				Liquid Phase	Liquid Phase	Liquid Phase	Vapor Phase
Temperature	C	60	60	200	200	250	250
Pressure	bar	200	200	200	200	20	20
Molar Vapor Fraction		0.0403663	0.306104	0	0	0	1
Molar Liquid Fraction		0.959634	0.693896	1	1	1	0
Molar Solid Fraction		0	0	0	0	0	0
Mass Vapor Fraction		0.0068664	0.0580838	0	0	0	1
Mass Liquid Fraction		0.993134	0.941916	1	1	1	0
Mass Solid Fraction		0	0	0	0	0	0
Molar Enthalpy	kcal/mol	-20.3296	-15.7868	-16.7132	-16.8093	-13.7303	-9.86932
Mass Enthalpy	cal/gm	-342.572	-334.855	-281.634	-293.722	-335.112	-172.441
Molar Entropy	cal/mol-K	-91.5397	-73.6943	-83.1678	-81.9056	-59.172	-64.018
Mass Entropy	cal/gm-K	-1.54253	-1.56313	-1.40146	-1.4312	-1.4442	-1.11855
Molar Density	mol/cc	0.00885768	0.00800342	0.00379901	0.0038784	0.00928468	0.000502802
Mass Density	gm/cc	0.525649	0.377323	0.225448	0.221955	0.380414	0.028777
Enthalpy Flow	kcal/hr	-3.08315e+07	-5.02283e+06	-2.5347e+07	-3.08408e+07	-7122.74	-1.81026e+07
Average MW		59.3439	47.1452	59.3439	57.2286	40.9722	57.2332
+ Mole Flows	**kmol/hr**	**1516.58**	**318.166**	**1516.58**	**1834.75**	**0.518761**	**1834.23**
+ Mole Fractions							
− Mass Flows	**kg/hr**	**90000**	**15000**	**90000**	**105000**	**21.2548**	**104979**
C2H4	kg/hr	18000	3000	17996.6	20988.9	0.247766	20988.6
HDPE	kg/hr	0	0	3.44585	11.1362	11.1362	2.84076e-80
H2	kg/hr	90	150	89.9988	239.993	3.45827e-07	239.993
TICL4	kg/hr	450	75	450	525	0.136824	524.863
TEA	kg/hr	450	75	449.996	524.99	0.247531	524.742
N-HEX-01	kg/hr	71010	11700	71010	82710	9.48648	82700.5
+ Mass Fractions							
Volume Flow	l/min	2853.62	662.562	6653.43	7884.47	0.931214	60800.2

For CSTR 1 :-

Degree of Polymerization

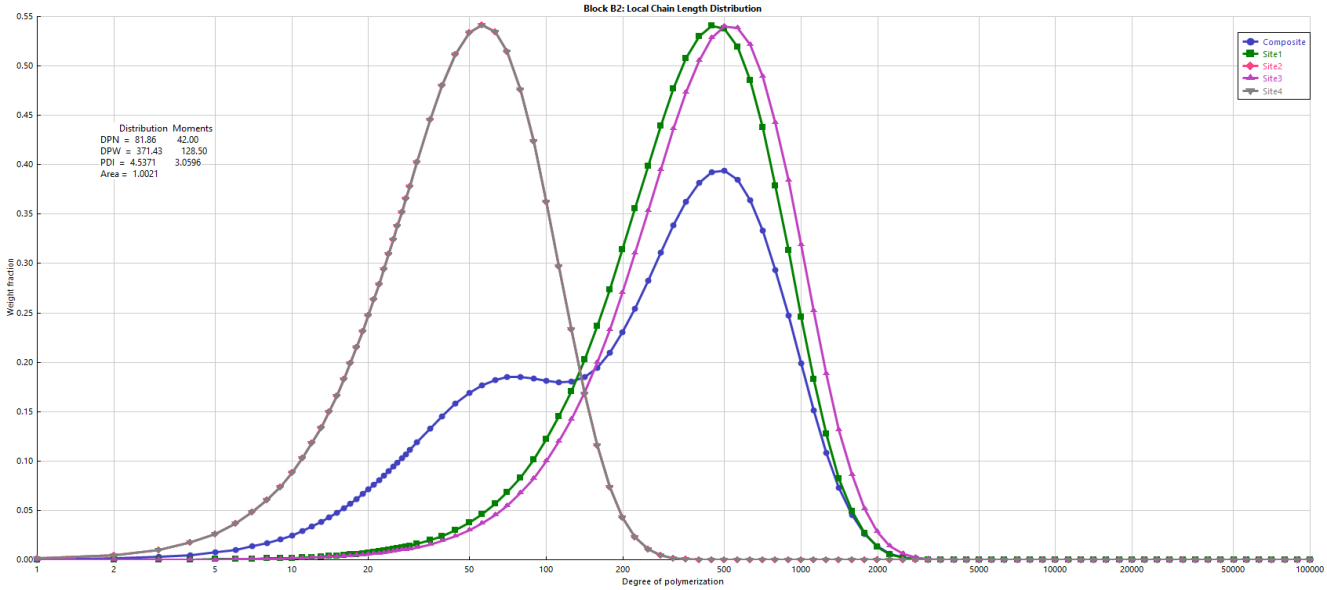


Molecular Weight Distribution

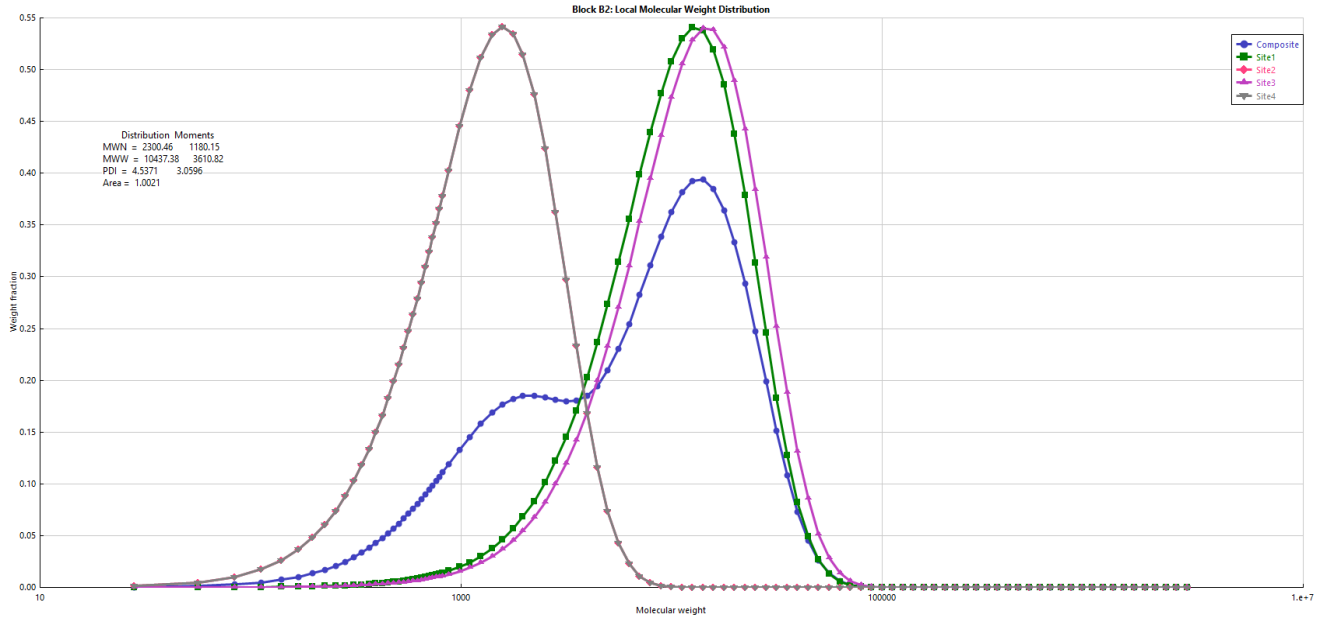


For CSTR 2 :-

Degree of Polymerization

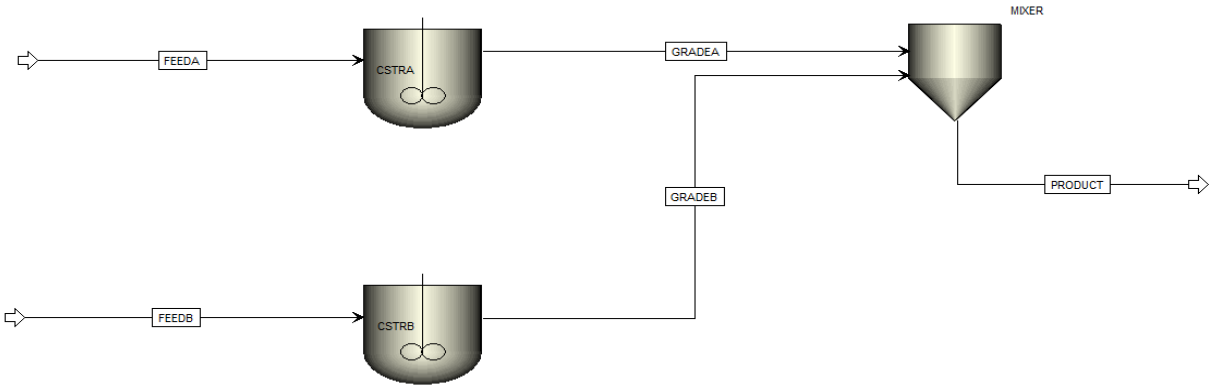


Molecular Weight Distribution

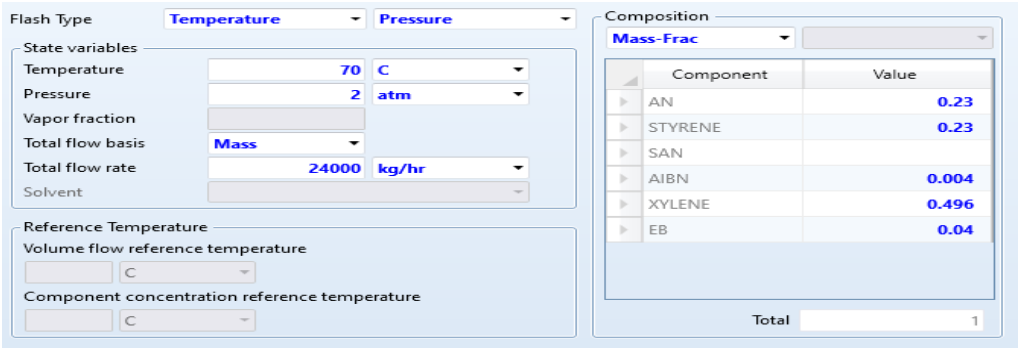


2.

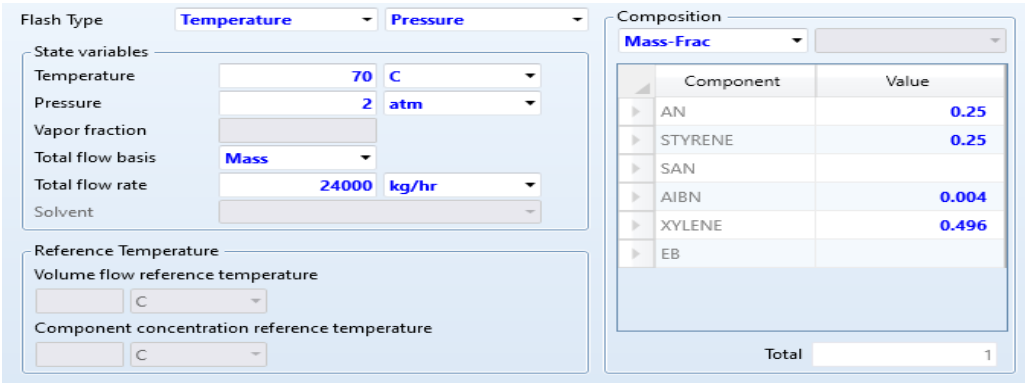
Flowsheet :-



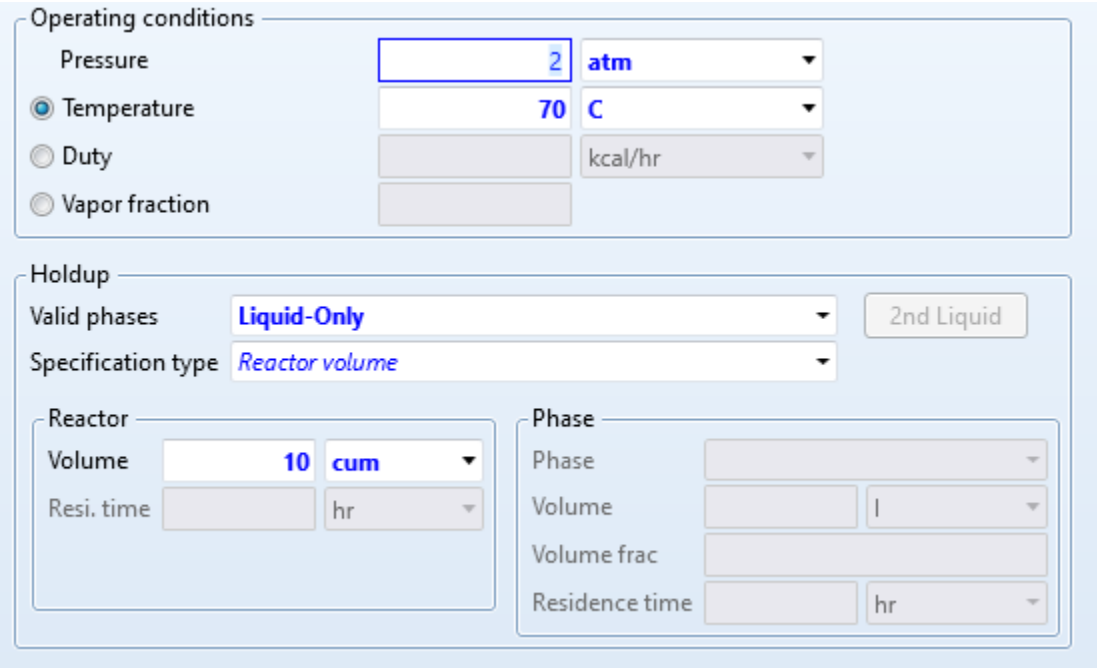
Feed A :-



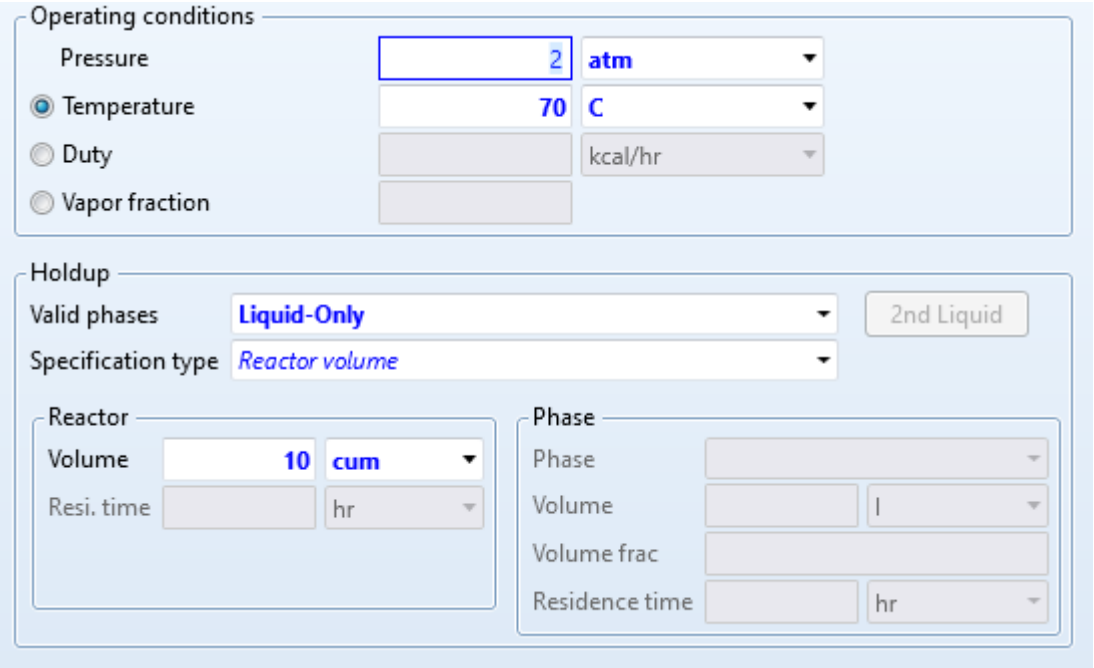
Feed B :-



CSTR A Specification :-



CSTR B Specification :-



Reaction 1 :-

Reaction	Reactants		Products	Active	Delete
1) Init-Dec	Aibn	->	e.n.R* + a.A + b.B	☑	✗
2) Chain-Ini	Styrene + R*	->	P1[Styrene]	☑	✗
3) Chain-Ini	An + R*	->	P1[An]	☑	✗
4) Propagation	Pn[Styrene] + Styrene	->	Pn+1[Styrene]	☑	✗
5) Propagation	Pn[Styrene] + An	->	Pn+1[An]	☑	✗
6) Propagation	Pn[An] + Styrene	->	Pn+1[Styrene]	☑	✗
7) Propagation	Pn[An] + An	->	Pn+1[An]	☑	✗
8) Chat-Mon	Pn[Styrene] + Styrene	->	(1-f).Dn + f.Dn= + P1[Styrei	☑	✗
9) Chat-Mon	Pn[Styrene] + An	->	(1-f).Dn + f.Dn= + P1[An]	☑	✗
10) Chat-Mon	Pn[An] + Styrene	->	(1-f).Dn + f.Dn= + P1[Styrei	☑	✗
11) Chat-Mon	Pn[An] + An	->	(1-f).Dn + f.Dn= + P1[An]	☑	✗

Reaction 2 :-

Reaction	Reactants		Products	Active	Delete
1) Init-Dec	Aibn	->	e.n.R* + a.A + b.B	☑	✗
2) Chain-Ini	An + R*	->	P1[An]	☑	✗
3) Chain-Ini	Styrene + R*	->	P1[Styrene]	☑	✗
4) Propagation	Pn[An] + An	->	Pn+1[An]	☑	✗
5) Propagation	Pn[An] + Styrene	->	Pn+1[Styrene]	☑	✗
6) Propagation	Pn[Styrene] + An	->	Pn+1[An]	☑	✗
7) Propagation	Pn[Styrene] + Styrene	->	Pn+1[Styrene]	☑	✗
8) Chat-Mon	Pn[An] + An	->	(1-f).Dn + f.Dn= + P1[An]	☑	✗
9) Chat-Mon	Pn[An] + Styrene	->	(1-f).Dn + f.Dn= + P1[Styrei	☑	✗
10) Chat-Mon	Pn[Styrene] + An	->	(1-f).Dn + f.Dn= + P1[An]	☑	✗
11) Chat-Mon	Pn[Styrene] + Styrene	->	(1-f).Dn + f.Dn= + P1[Styrei	☑	✗