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Rapid kinetic evaluation of ansa-metallocne catalysts and cyclic diene (ENB): how do olefins catalytic activity, molecular weight, and diene incorporation rate affect each other?

Amjad Ali[1], Muhammad Nadeem[2], Jinwei Lu[1], Jamile Mohammadi Moradian[1], Tahir Rasheed[3], Tariq Aziz[3], Chanez Maouche[1], Yintian Guo[3], Muhammad Awais[5], Fan Zhiqiang[3], Li Quo[1]*

[1]Research School of Polymeric Materials Science & Engineering, Jiangsu University, Zhenjiang, 212013, PR China.

[2]Department of Environmental Engineering, Wuhang University of Technology, Wuhan, 430223, PR China.

[3]Interdisciplinary Research Center for Advanced Materials, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia.

[4]MOE Key Laboratory of Macromolecular Synthesis and Functionalization, Department of Polymer Science and Engineering, Zhejiang University, Hangzhou, 310027, PR China.

[5]Research center of Fluid Machinery Engineering and Technology, Jiangsu University, Zhenjiang, 212013, PR China.

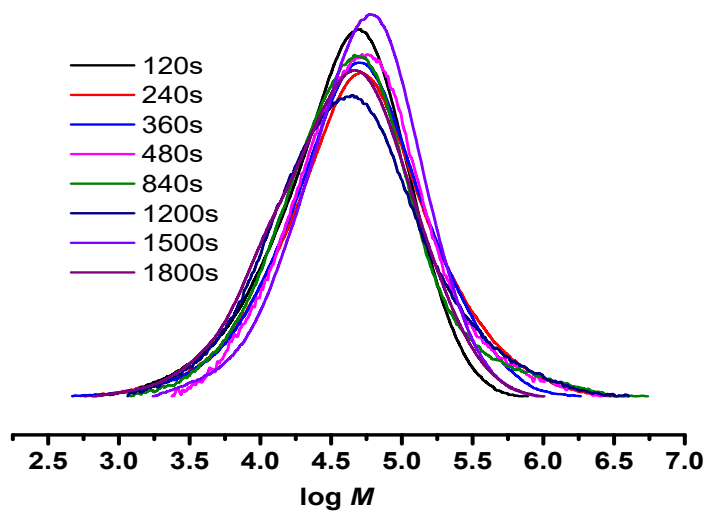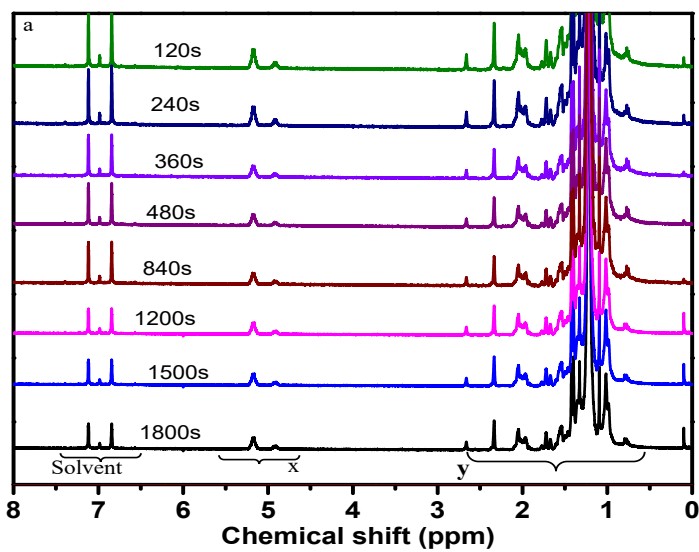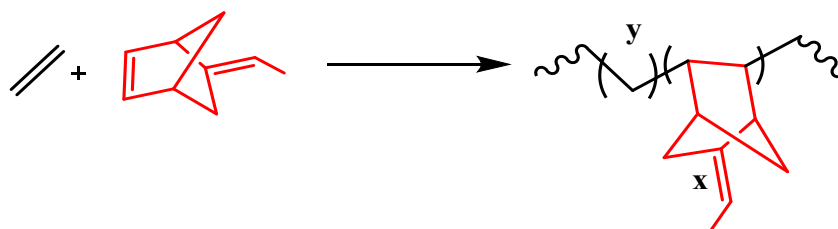***Corresponding author:** E-mail address: liguo@ujs.edu.cn (Li Guo)

Figure S1. Change of molecular distribution of E/ENB copolymers with polymerization time
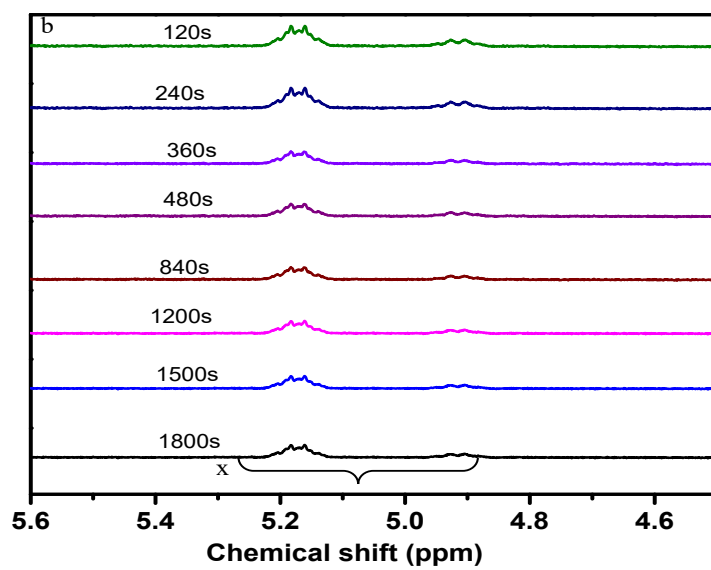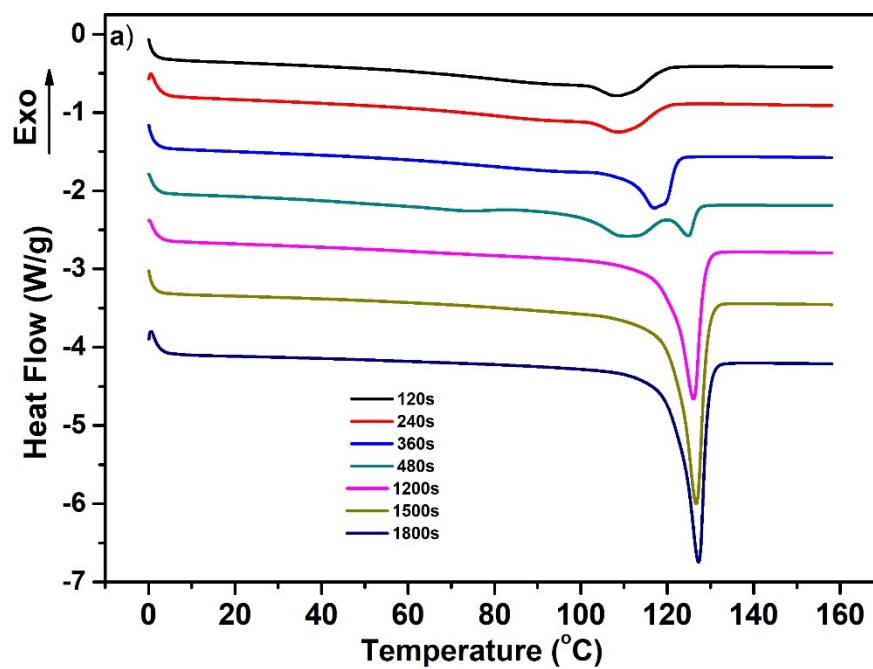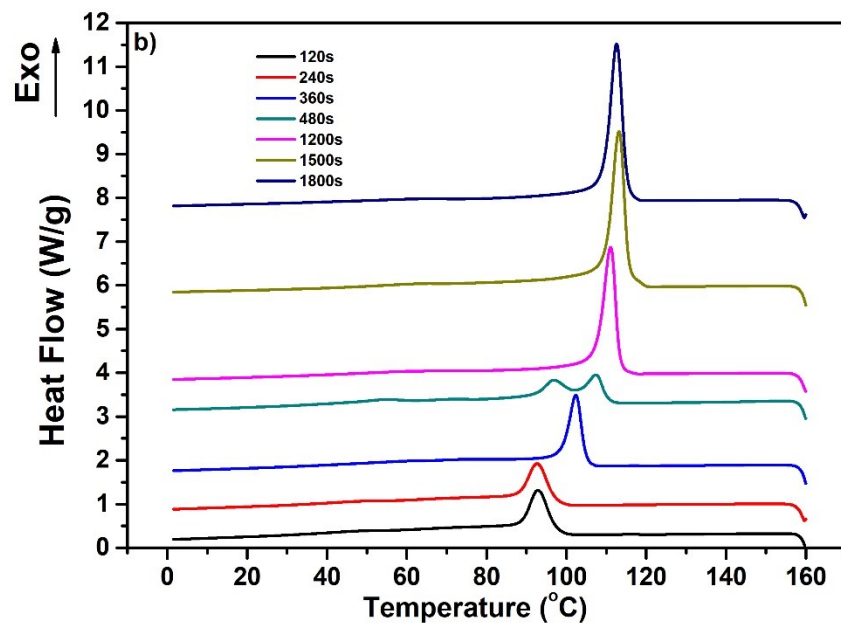
Figure S2 HNMR Spectra's of the E/ENB copolymer

Figure S3. The DSC heating curve of ethylene-ENB copolymers with time.

Table S1 Calculation for ENB

RUN	Time see	Yield g	Enb in pol mol%	S (ppm)	Enb in pol wt%	mol_{ENB}/mol_{cat}	R_P^{ENB}/mol_{cat} molENB/molcat s	*C %	[ENB] mol/L	k_p^{ENB} L/mol s
1.1	120	0.47	5.10	9.80	18.7	586	3.21	16.43	0.0453	431
1.2	240	0.68	4.87	12.33	18.0	815	1.96	29.91	0.0396	165
1.3	360	0.87	4.61	12.47	17.2	995	1.14	45.38	0.0351	72
1.4	480	1.09	3.97	14.06	15.1	1093	0.689	54.68	0.0327	38.6
1.5	840	1.44	3.43	14.68	13.2	1268	0.145	75.42	0.0283	6.79
1.6	1200	1.59	2.98	13.96	11.6	1233	0.0228	79.2	*0.0292*	0.987
1.7	1500	1.7	2.87	13.63	11.3	1274	0.0075	82.67	0.0282	0.322
1.8	1800	1.76	2.83	13.70	11.1	1302	0.00228	86.06	0.0275	0.0965

a)

Model	Exponential	
Equation	y = y0 + A*exp(R0*x)	
Reduced Chi-	1246.194	
Adj. R-Square	0.99329	
	Value	Standard Er
y0	1273.084	18.73054
B A	-1252.83	36.69733
R0	-0.00436	2.78908E-4

Legend: ■ B — Exponential Fit of Sheet1 B
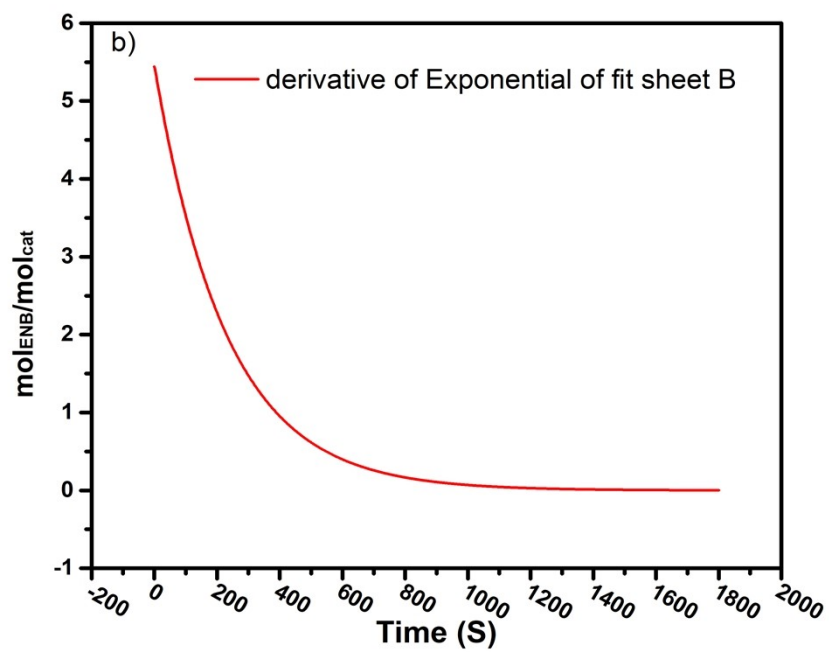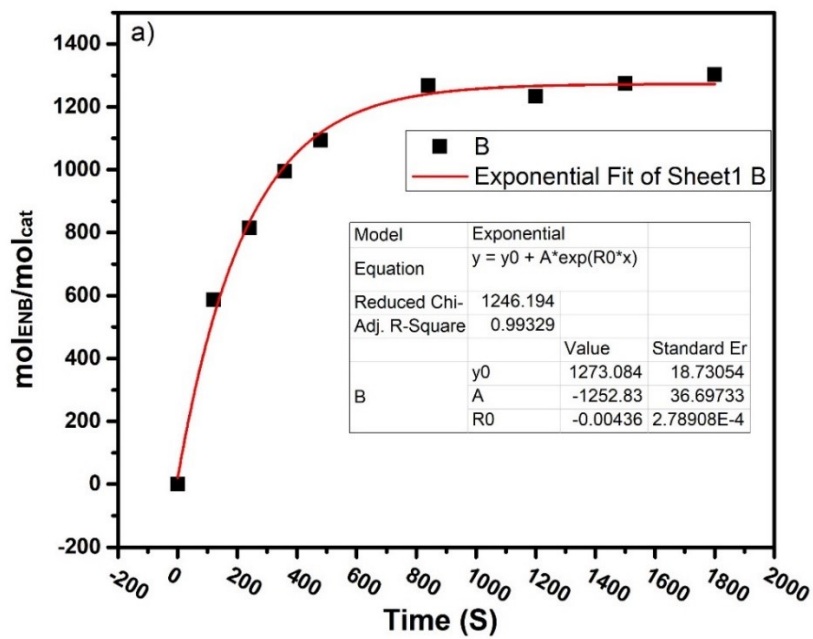
b)

Legend: derivative of Exponential of fit sheet B

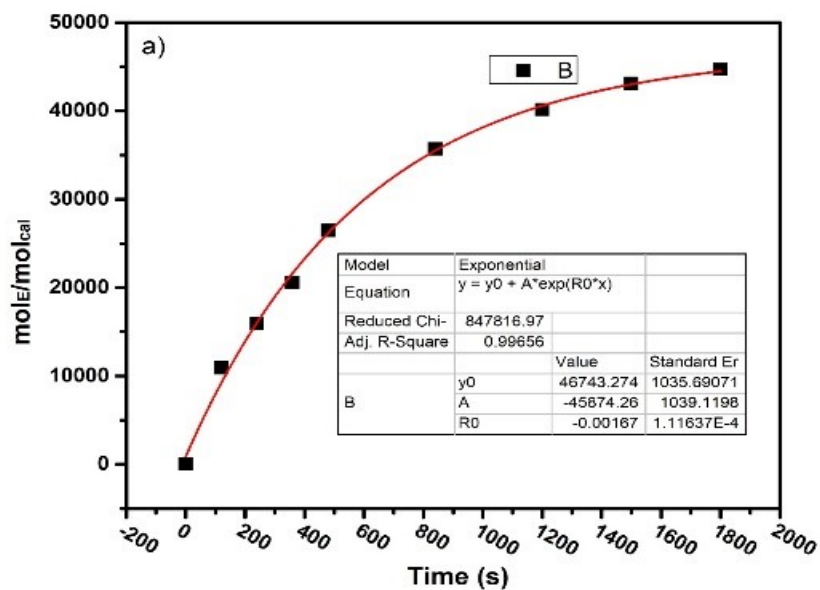**Figure S4.** Plot of mol_{ENB}/mol_{cat} vs time, and Differentiate.

Table S2 Calculation for ethylene

RUN	Time	Yield	Enb in pol	S	mE in pol	mol_E/mol_{cat}	R_P^E/mol_{cat}	*C	k_p^E
	see	g	wt%	(ppm)	g		molENB/molcat s	%	L/mol s
1.1	120	0.47	18.7	9.80	0.382	10911	62.9	16.43	9115
1.2	240	0.68	18.0	12.33	0.557	15928	51.2	29.91	4076
1.3	360	0.87	17.2	12.47	0.721	20587	41.8	45.38	2193
1.4	480	1.09	15.1	14.06	0.926	26449	34	54.68	1480
1.5	840	1.44	13.2	14.68	1.249	35700	18.5	75.42	584
1.6	1200	1.59	11.6	13.96	1.405	40137	10	79.2	301
1.7	1500	1.7	11.3	13.63	1.509	43104	6.2	82.67	179
1.8	1800	1.76	11.1	13.70	1.564	44698	3.875	86.06	107

Figure S5. Plot mol_E/mol_{cat} vs time and differentiate.