Table S1. 20 kinetic mechanism function models of solid pyrolysis [11].

| Reaction mechanism	Number	Symbol	$g(\alpha)$	$f(\alpha)$
Power law	1	P_1	$\alpha^{1/2}$	$2\alpha^{1/2}$
	2	P_2	$\alpha^{1/3}$	$3\alpha^{2/3}$
	3	P_3	$\alpha^{1/4}$	$4\alpha^{3/4}$
Random nucleation and growth of nuclei models	4	$A_{1/2}$	$[-\ln(1-\alpha)]^2$	$\dfrac{1}{2}(1-\alpha)[-\ln(1-\alpha)]^{-1}$
	5	A_1	$-\ln(1-\alpha)$	$(1-\alpha)[-\ln(1-\alpha)]$
	6	$A_{4/3}$	$[-\ln(1-\alpha)]^{3/4}$	$\dfrac{4}{3}(1-\alpha)[-\ln(1-\alpha)]^{1/4}$
	7	$A_{3/2}$	$[-\ln(1-\alpha)]^{2/3}$	$\dfrac{3}{2}(1-\alpha)[-\ln(1-\alpha)]^{1/3}$
	8	A_2	$[-\ln(1-\alpha)]^{1/2}$	$2(1-\alpha)[-\ln(1-\alpha)]^{1/2}$
	9	$A_{5/2}$	$[-\ln(1-\alpha)]^{2/5}$	$\dfrac{5}{2}(1-\alpha)[-\ln(1-\alpha)]^{3/5}$
	10	A_3	$[-\ln(1-\alpha)]^{1/3}$	$3(1-\alpha)[-\ln(1-\alpha)]^{2/3}$
	11	A_4	$[-\ln(1-\alpha)]^{1/4}$	$4(1-\alpha)[-\ln(1-\alpha)]^{3/4}$
Reaction order	12	$F_{3/2}$	$2(1-\alpha)^{-3/2}$	$(1-\alpha)^{-1/2}$
	13	F_2	$(1-\alpha)^{-1}$	$(1-\alpha)^2$
	14	F_3	$(1-\alpha)^{-2}$	$(1-\alpha)^3$
Phase boundary controlled reaction	15	R_2	$1-(1-\alpha)^{1/2}$	$2(1-\alpha)^{2/3}$
	16	R_3	$1-(1-\alpha)^{1/3}$	$3(1-\alpha)^{1/2}$
Diffusion model	17	D_1	α^2	$\dfrac{1}{2}\alpha^{-1}$
	18	D_2	$\alpha+(1-\alpha)\ln(1-\alpha)$	$[-\ln(1-\alpha)]^{-1}$
	19	D_3	$[1-(1-\alpha)^{1/3}]^2$	$\dfrac{3}{2}(1-\alpha)^{2/3}[1-(1-\alpha)^{1/3}]^{-1}$
	20	D_4	$1-\dfrac{2}{3}\alpha-(1-\alpha)^{2/3}$	$\dfrac{3}{2}[(1-\alpha)^{2/3}-1]^{-1}$
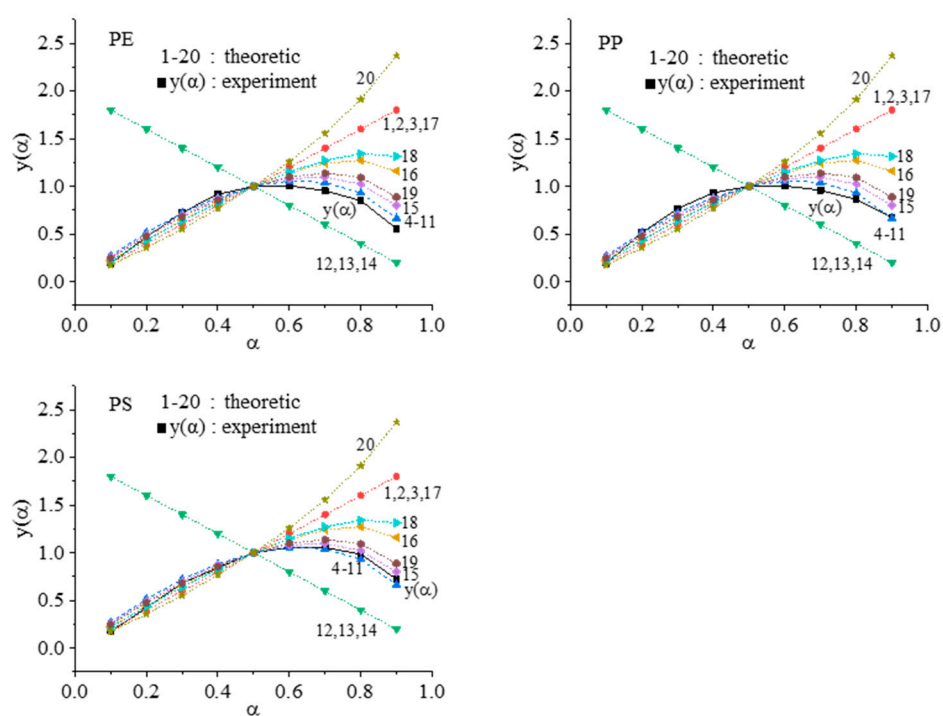
Figure S1 Fitting theoretical and experimental curves under Mark method of PE,

PP and PS plastics.