Response surface methodology based increasing of the isotropic thermal conductivity of polyethylene composites containing multiple fillers – Supporting Information

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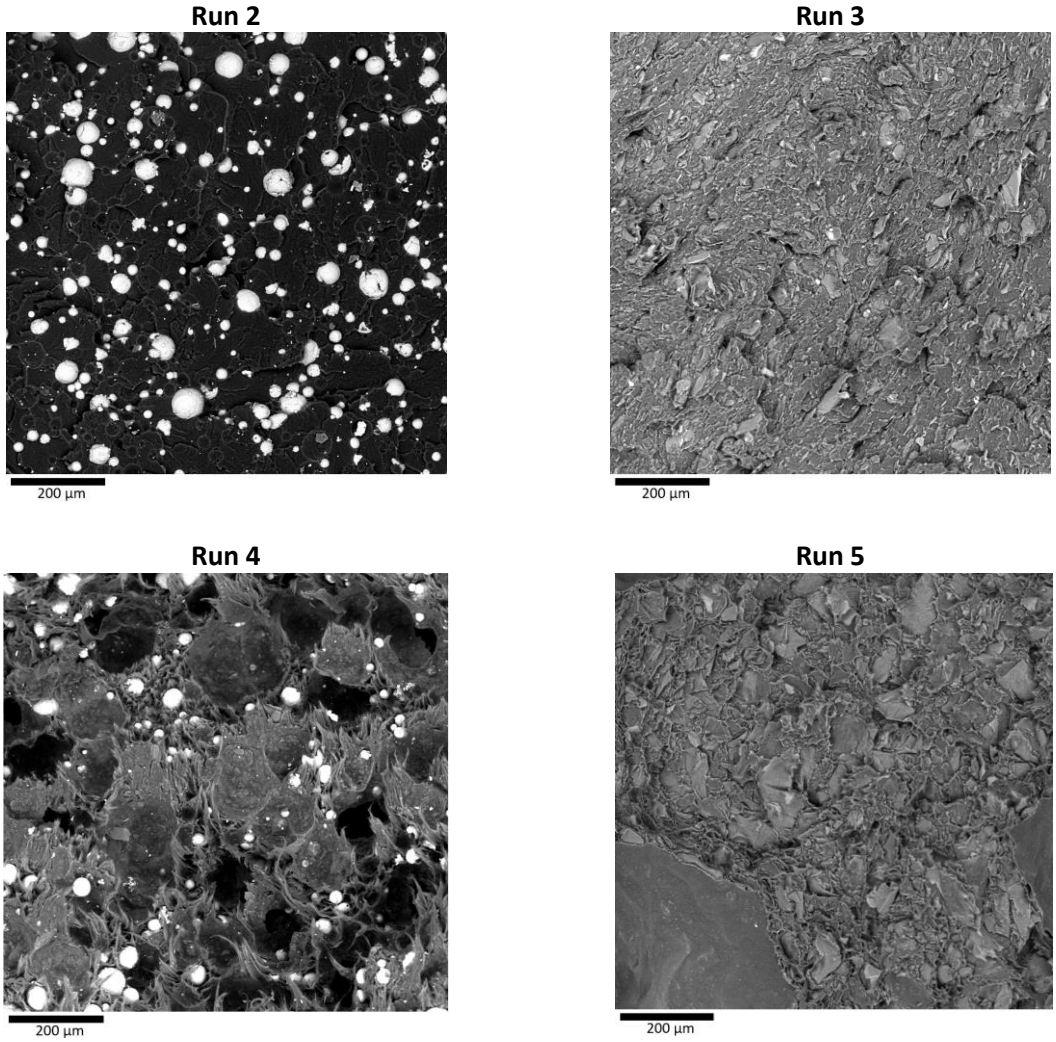
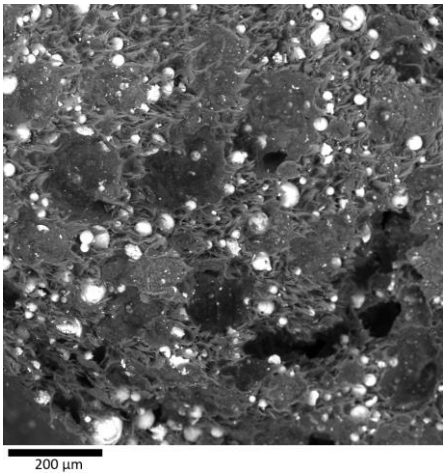
S1. SEM-images of the compositions



Run 6



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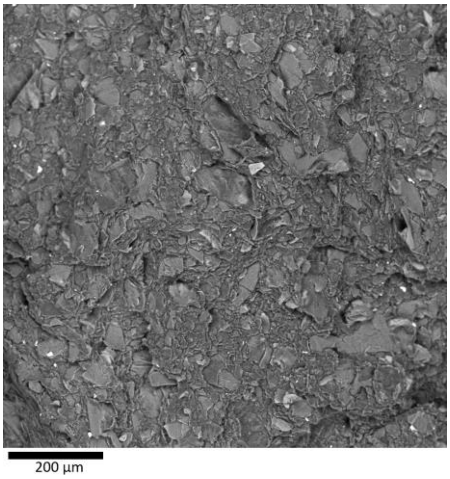

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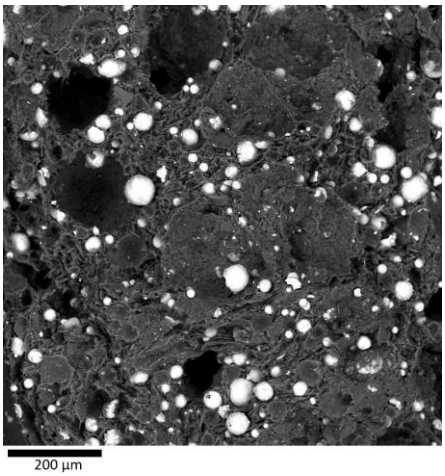
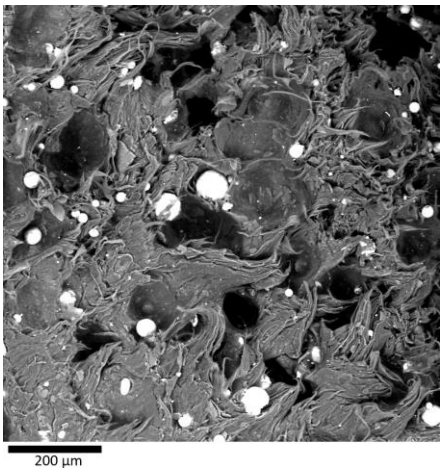
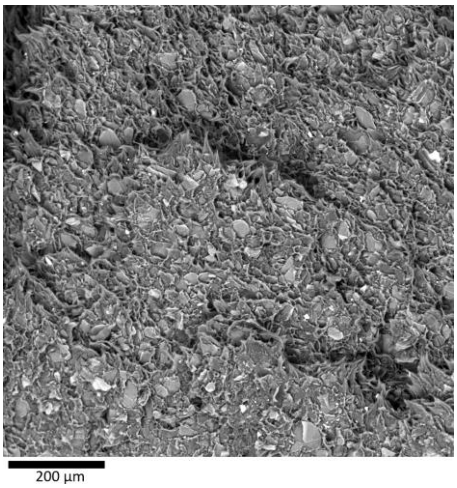


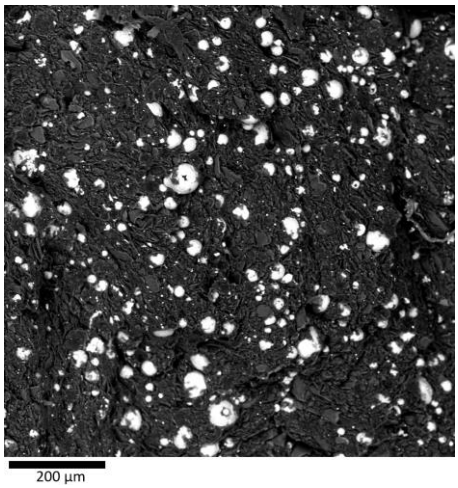
Run 9

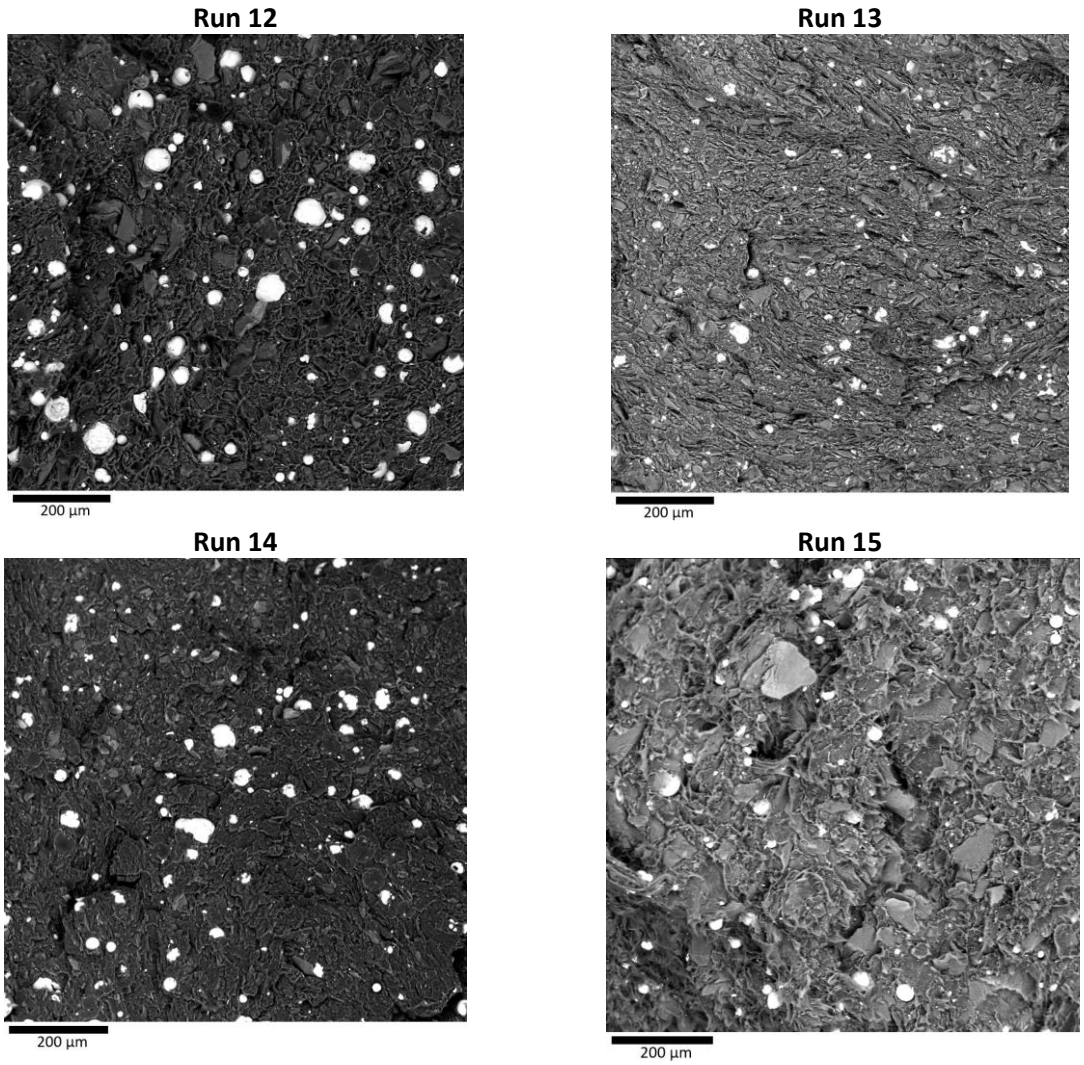


Run 10



Run 11





S2. ANOVA Results

S2.1. ANOVA Results for the TC FCCD

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	9	15.993274	1.77703	270.1134
Error	7	0.046052	0.00658	**Prob > F**
C. Total	16	16.039326		<.0001*

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|
Intercept	1.4016644	0.034707	40.39	<.0001*
Alumina	0.7081123	0.025649	27.61	<.0001*
PP44	0.5796794	0.025649	22.60	<.0001*
GFG75	0.7333924	0.025649	28.59	<.0001*
Alumina*PP44	0.285701	0.028677	9.96	<.0001*
Alumina*GFG75	0.3375624	0.028677	11.77	<.0001*
PP44*GFG75	0.1667296	0.028677	5.81	0.0007*
Alumina*Alumina	0.2156997	0.049553	4.35	0.0033*
PP44*PP44	0.0575522	0.049553	1.16	0.2835
GFG75*GFG75	0.1186803	0.049553	2.40	0.0478*

S2.2. ANOVA Results for the melt viscosity FCCD

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	9	254907123	28323014	45,3006
Error	7	4376571	625224,37	**Prob > F**
C. Total	16	259283693		<,0001*

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|
Intercept	12769,2	338,3455	37,74	<,0001*
Al2O3	3820,01	250,0449	15,28	<,0001*
PP44	937,79	250,0449	3,75	0,0072*
GFG75	2664,93	250,0449	10,66	<,0001*
Al2O3*PP44	846,2	279,5587	3,03	0,0192*
Al2O3*GFG75	1480,55	279,5587	5,30	0,0011*
PP44*GFG75	256,45	279,5587	0,92	0,3895
Al2O3*Al2O3	823,95	483,0718	1,71	0,1318
PP44*PP44	-675,25	483,0718	-1,40	0,2049
GFG75*GFG75	789,25	483,0718	1,63	0,1463

S3. Determination of the dominant filler for the viscosity increase

	Al_2O_3	G	EG	Viscosity @ $\dot{\gamma} = 3\ s^{-1}$ (Pa.s)
m.%	10	0	0	
Coded level	-0,56	0	0	8337
m%	0	10	0	
Coded level	0	0,6	0	7820
m%	0	0	10	
Coded level	0	0	0,6	9568

S4. Densities used of the polymer and fillers

HDPE	G	EG	Al_2O_3	CNT
0.945 $g.cm^{-3}$	2.16 $g.cm^{-3}$	2.16 $g.cm^{-3}$	3.85 $g.cm^{-3}$	1.35 $g.cm^{-3}$