

SUPPLEMENTARY MATERIAL TO
Modelling the process of Al(OH)₃ crystallization from industrial sodium aluminate solutions using artificial neural networks

RADENKO SMILJANIĆ¹, DRAGICA LAZIĆ², MILADIN GLIGORIĆ²,
MILOVAN JOTANOVIĆ², ŽIVAN ŽIVKOVIĆ² and IVAN MIHAJLOVIĆ^{3*}

¹Alumina Factory Birač A.D., Zvornik, ²Faculty of Technology in Zvornik, University of East Sarajevo, Bosnia and Herzegovina and ³Technical Faculty in Bor, University of Belgrade, Serbia

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TABLE I-S. Correlation matrix for the input (X_1 – X_7) and the output (Y_1 – Y_4) variables of the industrial sodium aluminate solution dissociation process (number of data points for each variable was 500)

Parameter	Correlation	X_1	X_2	X_3	X_4	X_5	X_6	X_7	Y_1	Y_2	Y_3	Y_4
X_1	Pearson Sig. (2-tailed)	1										
X_2	Pearson Sig. (2-tailed)	–.319 ^a	1									
X_3	Pearson Sig. (2-tailed)	–.149 ^a	.361 ^a	1								
X_4	Pearson Sig. (2-tailed)	–.150 ^a	.209 ^a	–.030	1							
X_5	Pearson Sig. (2-tailed)	.090 ^b	–.252 ^a	–.489 ^a	.214 ^a	1						
X_6	Pearson Sig. (2-tailed)	.115 ^a	–.084	.458 ^a	–.040	.066	1					
X_7	Pearson Sig. (2-tailed)	–.125 ^a	.159 ^a	.421 ^a	–.156 ^a	–.716 ^a	–.147 ^a	1				

* Corresponding author. E-mail: imihajlovic@tf.bor.ac.rs

TABLE I-S. Continued

Parameter	Correlation	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	Y ₁	Y ₂	Y ₃	Y ₄
Y ₁	Pearson	-.143 ^a	.073	.447 ^a	-.108 ^b	-.720 ^a	-.227 ^a	.661 ^a	1			
	Sig. (2-tailed)	.001	.101	.000	.016	.000	.000	.000				
Y ₂	Pearson	.124 ^a	-.121 ^a	.424 ^a	-.016	.079	.921 ^a	-.129 ^a	-.222 ^a	1		
	Sig. (2-tailed)	.005	.007	.000	.729	.079	.000	.004	.000			
Y ₃	Pearson	.307 ^a	-.602 ^a	-.121 ^a	-.489 ^a	.031	.098 ^b	.006	-.011	.110 ^b	1	
	Sig. (2-tailed)	.000	.000	.007	.000	.490	.029	.886	.805	.014		
Y ₄	Pearson	.149 ^a	-.328 ^a	.270 ^a	-.198 ^a	-.583 ^a	-.173 ^a	.555 ^a	.900 ^a	-.154 ^a	.250 ^a	1
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	.000	.000	.001	.000	

^aCorrelation is significant at the 0.01 level (2-tailed); ^bcorrelation is significant at the 0.05 level (2-tailed)

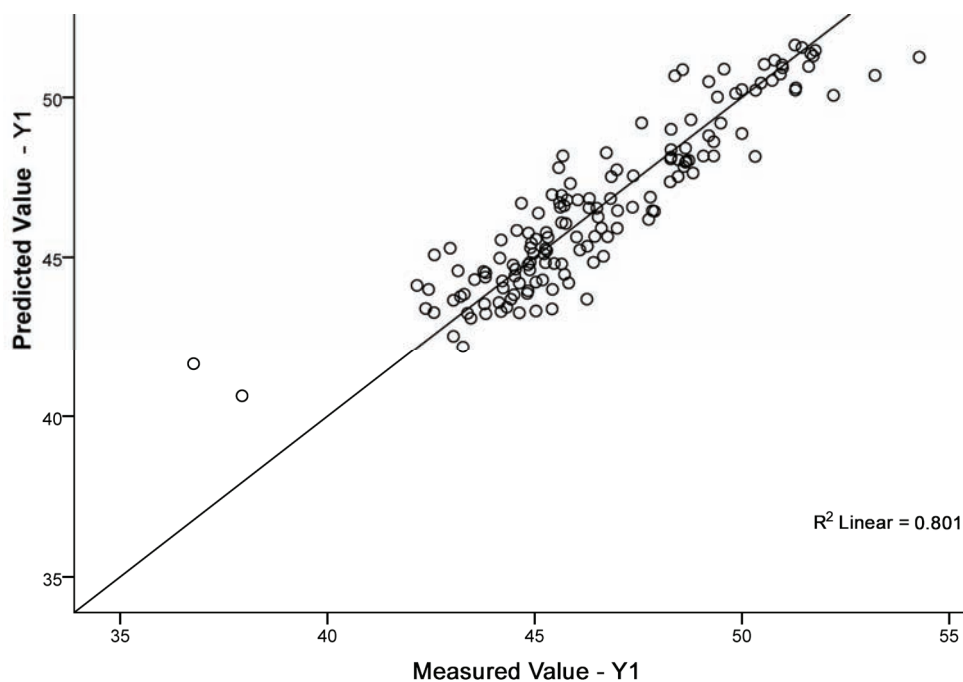
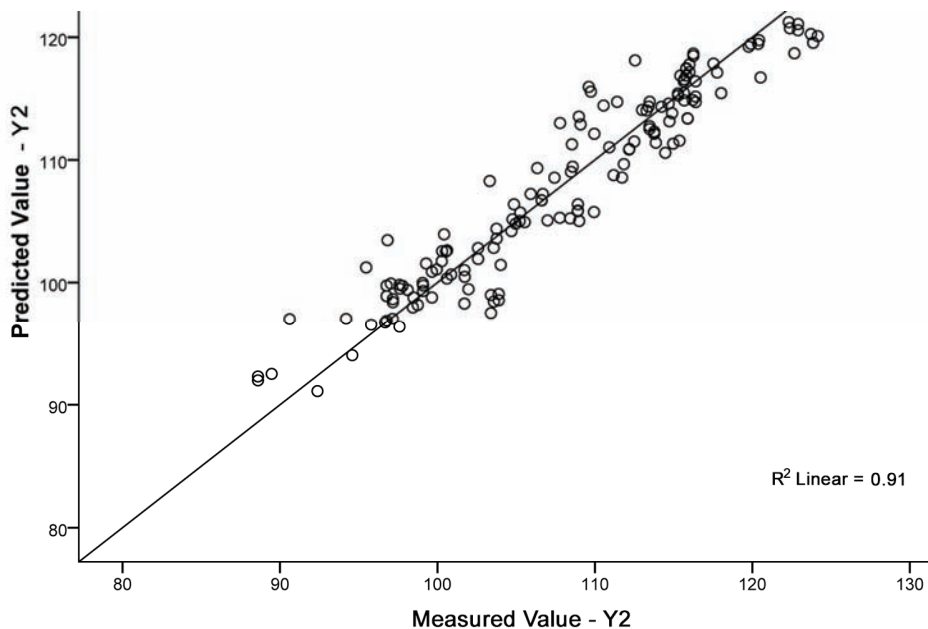
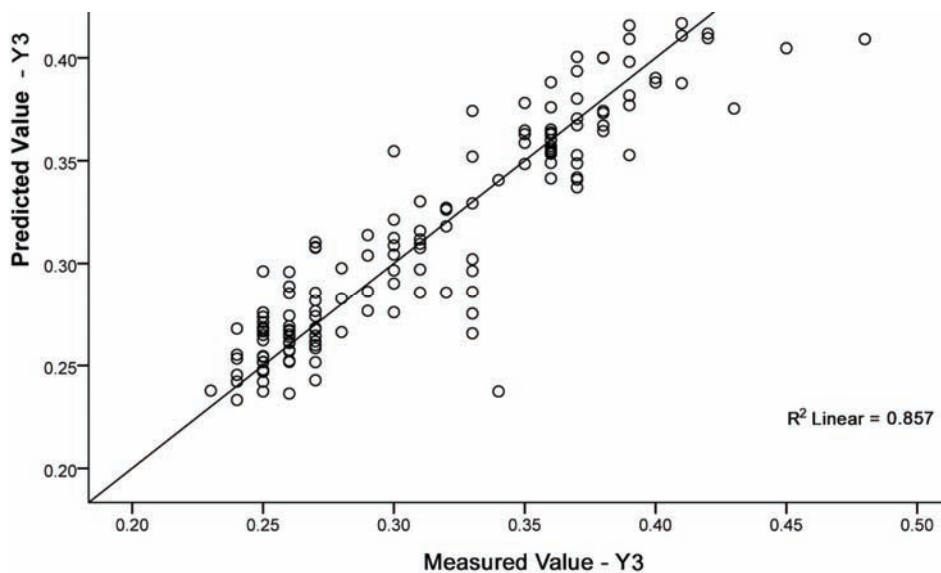


Fig. 1-S. Comparison of the measured and the values calculated using the ANN: a) the degree of decomposition of the industrial sodium aluminate solution (Y₁).



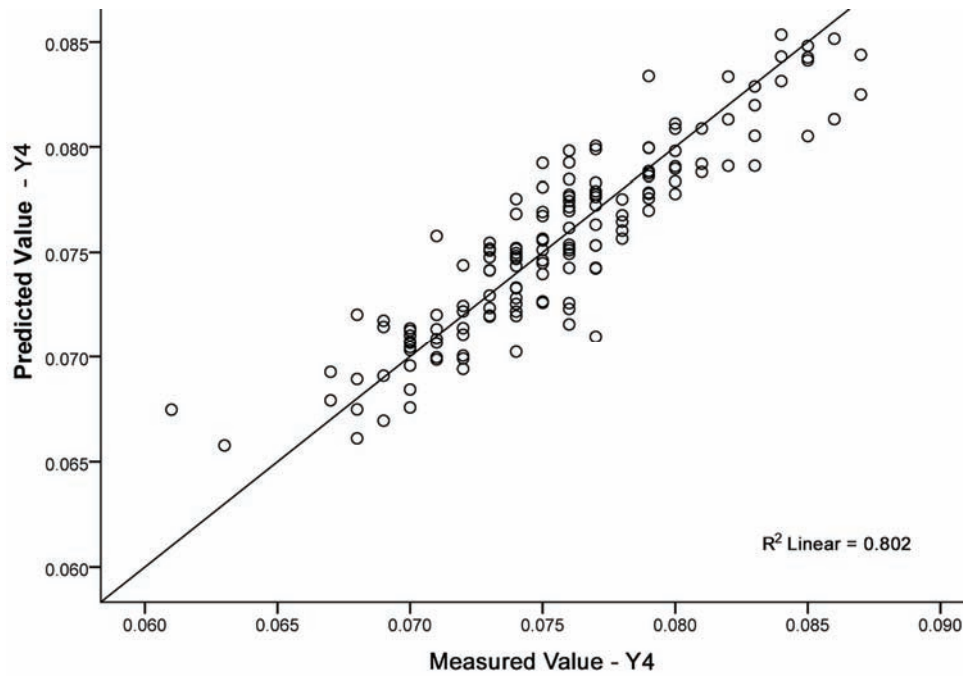
(b)

Fig. 1-S (continued). Comparison of the measured and the values calculated using the ANN:
b) average diameter of the gibbsite grains (Y₂).



(a)

Fig. 2-S. Comparison of the measured and the values calculated using the ANN:
a) Na₂O (total) content in the alumina (Y₃).



(b)

Fig. 2-S (continued). Comparison of the measured and the values calculated using the ANN:
b) specific utilization level of the process (Y_4).