

Effect of Structure and Composition of Non-Stoichiometry Magnesium Aluminate Spinel on Water Adsorption

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This supplementary information includes the adsorption isotherm and the detailed XPS information.

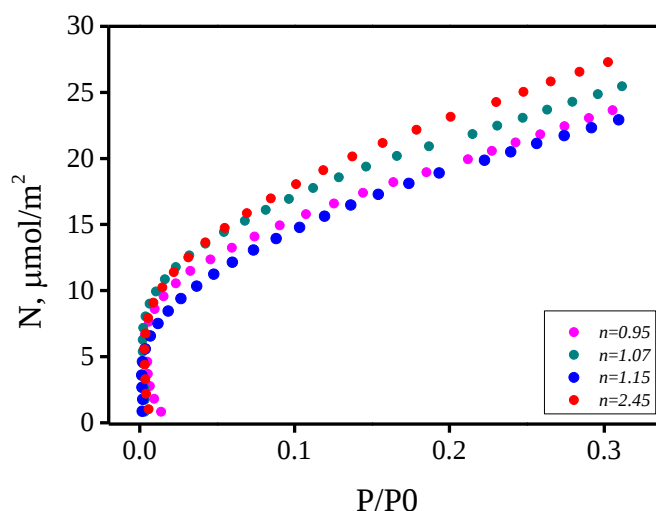


Figure S1. Adsorption isotherms of the samples with clean surface.

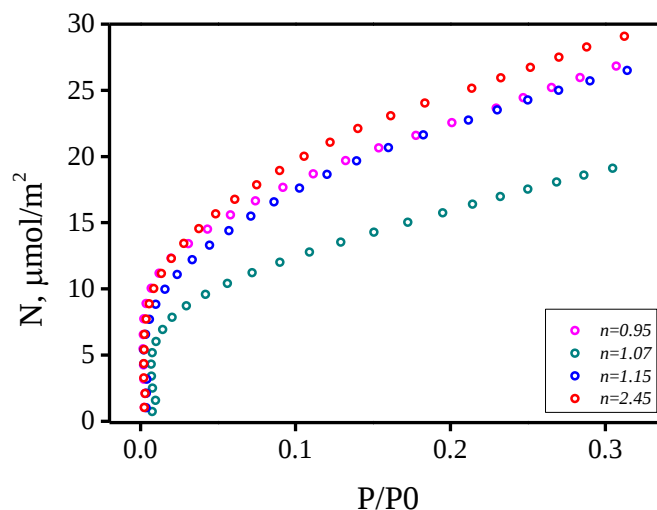


Figure S2. Adsorption isotherms of the samples with reduced surface.

Table S1. Atomic percentage of Al and Mg oxides and hydroxides for adsorption processes with reduction.

	After Degas, at. %				After Water Adsorption, at. %				Formed Hydroxide, at. %	
	Al-O	Al-OH	Mg-O	Mg-OH	Al-O	Al-OH	Mg-O	Mg-OH	Al(OH) ₃	Mg(OH) ₂
0.95	19.80 ± 0.99	13.08 ± 0.65	39.47 ± 1.97	28.03 ± 1.40	11.54 ± 0.57	21.34 ± 1.06	22.62 ± 1.13	44.47 ± 2.22	8.26 ± 0.41	16.85 ± 0.84
1.07	41.80 ± 2.09	11.39 ± 0.56	34.76 ± 1.73	11.98 ± 0.59	11.53 ± 0.57	39.05 ± 2.08	15.83 ± 0.79	30.91 ± 1.54	30.27 ± 1.51	18.93 ± 0.94
1.15	55.60 ± 2.78	13.71 ± 0.68	21.99 ± 1.09	8.70 ± 0.493	18.06 ± 0.90	51.24 ± 2.56	10.51 ± 0.52	20.18 ± 1.00	37.54 ± 1.87	11.48 ± 0.57
2.47	59.89 ± 2.99	21.88 ± 1.09	12.22 ± 0.61	5.94 ± 0.29	18.61 ± 0.93	63.20 ± 3.20	4.46 ± 0.22	13.53 ± 0.67	41.28 ± 2.06	7.76 ± 0.38

Table S2. Atomic percentage of Al and Mg oxides and hydroxides for adsorption processes with oxidation.

	After Degas, at. %				After Water Adsorption, at. %				Formed Hydroxide, at. %	
	Al-O	Al-OH	Mg-O	Mg-OH	Al-O	Al-OH	Mg-O	Mg-OH	Al(OH) ₃	Mg(OH) ₂
0.95	20.49 ± 1.02	12.39 ± 0.61	42.64 ± 2.13	24.46 ± 1.22	14.31 ± 0.71	18.57 ± 0.92	28.93 ± 1.44	38.17 ± 1.90	6.18 ± 0.31	13.71 ± 0.68
1.07	44.54 ± 2.22	8.70 ± 0.43	36.96 ± 1.84	9.78 ± 0.48	10.58 ± 0.52	42.66 ± 2.13	11.46 ± 0.57	35.28 ± 1.76	33.96 ± 1.70	25.50 ± 1.25
1.15	55.88 ± 2.79	13.43 ± 0.67	22.29 ± 1.11	8.40 ± 0.42	13.24 ± 0.66	56.06 ± 2.80	9.87 ± 0.49	20.82 ± 1.04	35.44 ± 1.77	12.42 ± 0.62
2.47	61.14 ± 3.05	20.67 ± 1.03	12.40 ± 0.62	5.77 ± 0.28	29.04 ± 1.45	52.77 ± 2.63	10.22 ± 0.51	7.92 ± 0.39	32.09 ± 1.60	2.18 ± 0.10



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