

The versatile $\text{Co}^{2+}/\text{Co}^{3+}$ oxidation states in cobalt alumina spinel: how to design strong blue nanometric pigments for color electrophoretic display.

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SUPPORTING INFORMATION

Figure SI-1. XRD patterns of CoAl_2O_4 , Co_2AlO_4 and Co_3O_4 compounds for comparison.

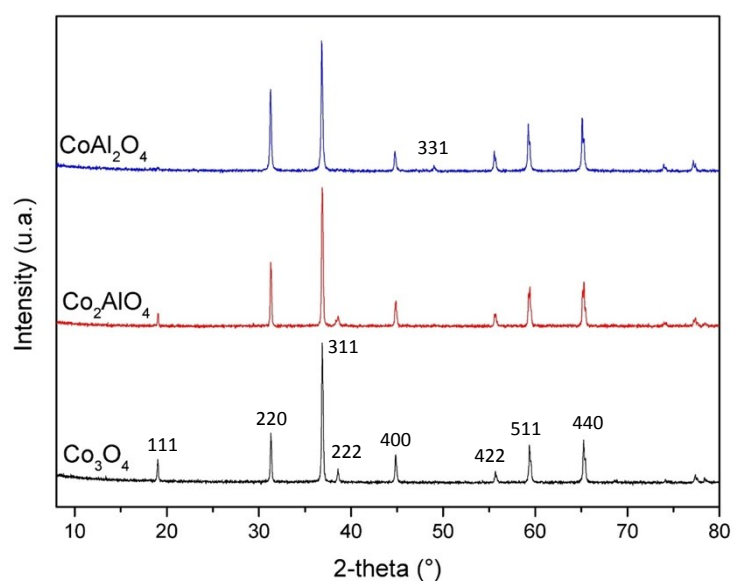


Figure SI-2. From the pigment particles to the hydrid particles: 1st step is silanisation, 2nd step is the dispersive polymerization using MMA monomer

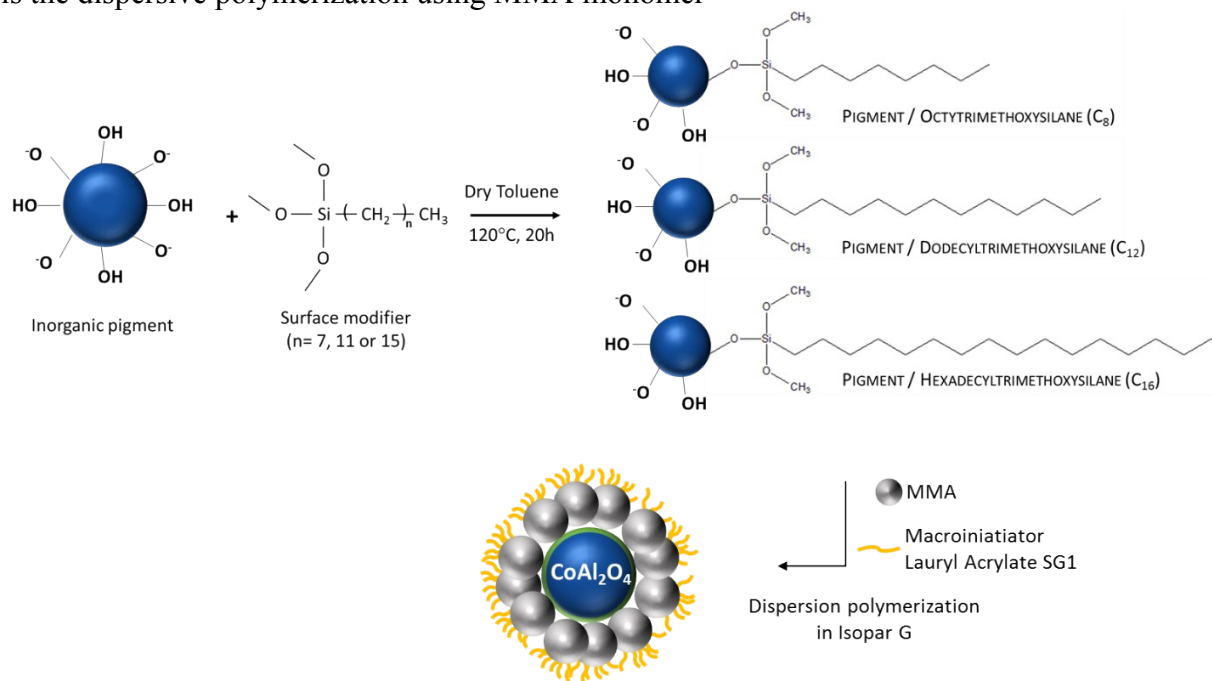


Figure SI-3. Sedimentation rate of the inks illustrated by the evolution of the TSI (Turbiscan Stability Index) versus time.

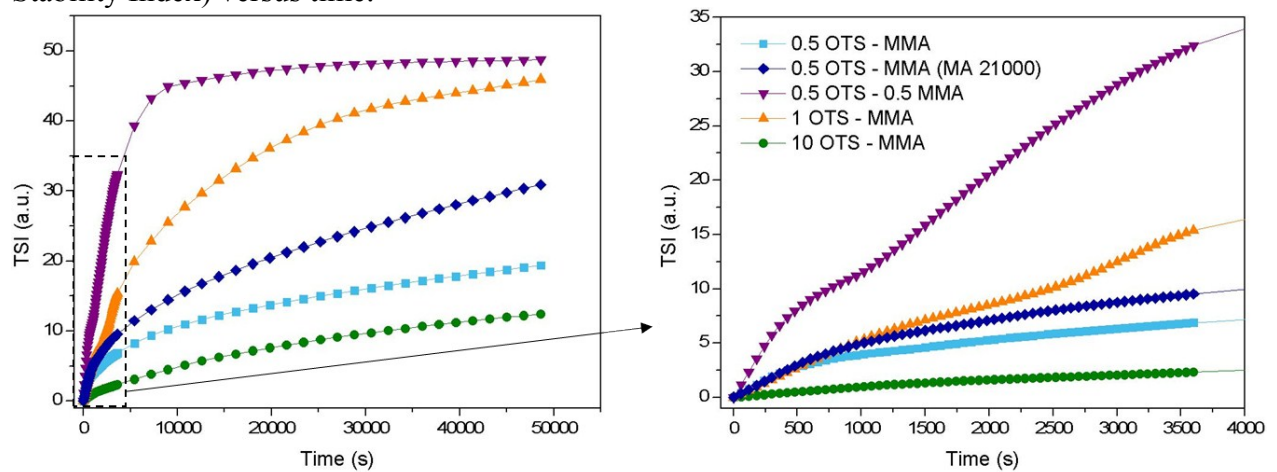


Figure SI-4. Photographs showing the inks stability during the first 24 hours of sedimentation.

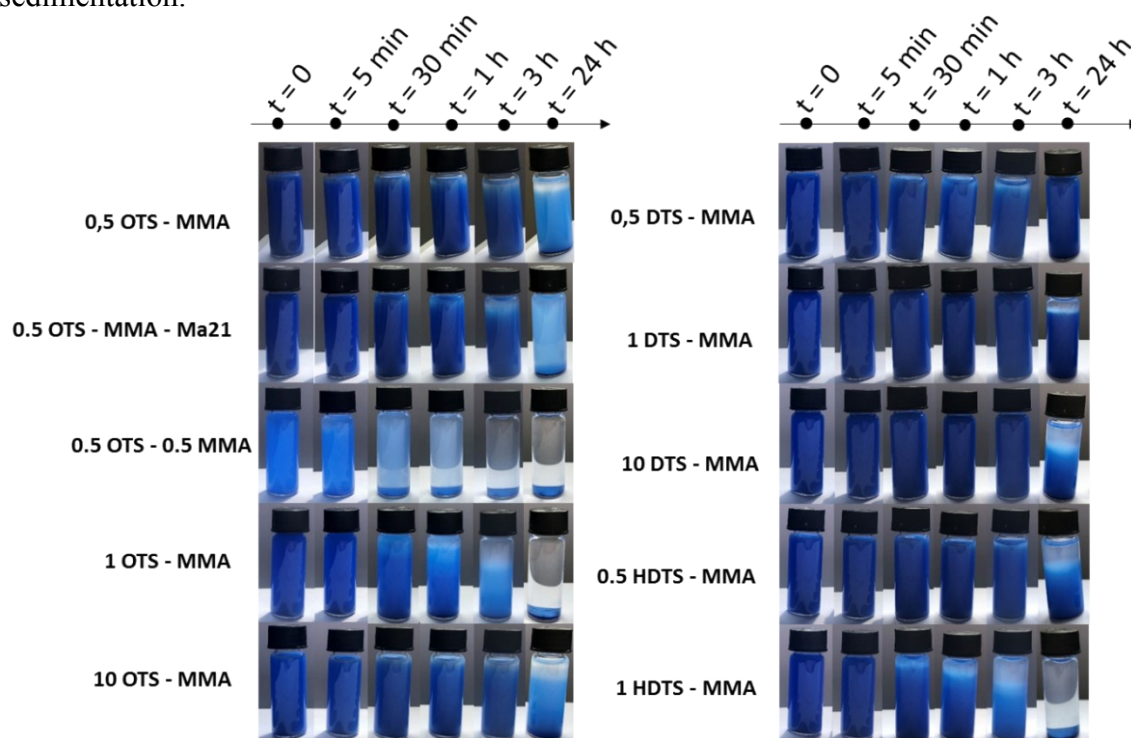


Figure SI-5. TEM micrographs of the hybrid particles obtained after the polymerisation step

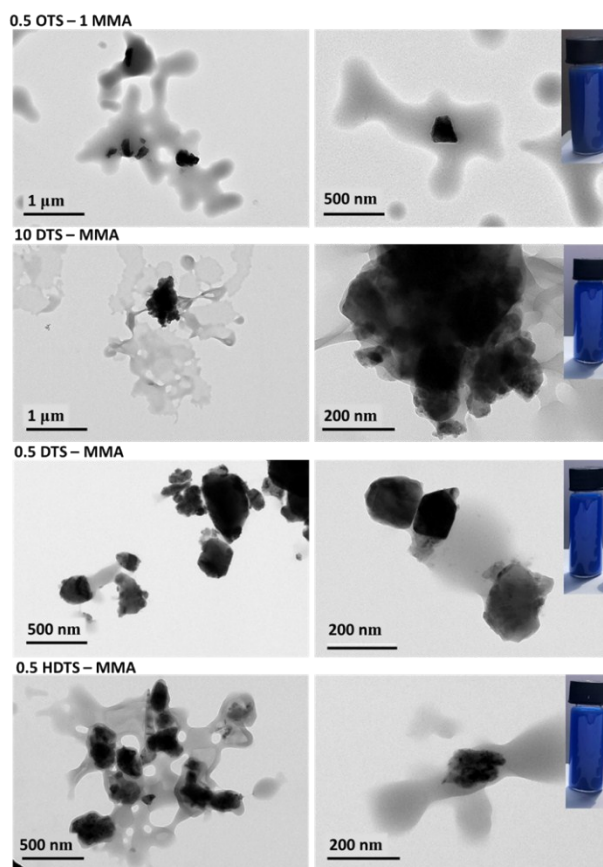


Table SI-1. Unit-cell parameter CoAl_2O_4 , Co_2AlO_4 and Co_3O_4 compounds for comparison.

Structure	Cell Param. (Å)
Co_3O_4	8.0835(1)
Co_2AlO_4	8.0935(2)
CoAl_2O_4	8.1057(2)

Table SI-2. Sum-up of the various parameters describing the electrophoretic inks

Pigment	Polymer content (%wt)	Hybrid density (u.a.)	Particle diameter (nm)	Electrophoretic mobility ($10^4 \mu\text{m}^2/\text{Vs}$)	Charge (e)	TSI	
						1h	12h
$b\text{-CoAl}_2\text{O}_4\text{-0.5-OTS-MMA}$	37	1.87	595	+ 0.0700	1083	7	18
$b\text{-CoAl}_2\text{O}_4\text{-0.5-OTS-MMA-Ma21}$	5	3.73	504	+ 0.1830	2285	10	29
$b\text{-CoAl}_2\text{O}_4\text{-0.5-OTS-0.5-MMA}$	6	3.62	1107	+ 0.040	4072	33	49
$b\text{-CoAl}_2\text{O}_4\text{-1-OTS-MMA}$	82	1.09	853	+ 0.2463	4679	15	45
$b\text{-CoAl}_2\text{O}_4\text{-10-OTS-MMA}$	75	1.17	509	+ 0.0600	700	2	12
$b\text{-CoAl}_2\text{O}_4\text{-0.5-DTS-MMA}$	76	1.16	787	+ 0.1627	2909	5	21
$b\text{-CoAl}_2\text{O}_4\text{-1-DTS-MMA}$	71	1.22	724	+ 0.0227	496	2	5
$b\text{-CoAl}_2\text{O}_4\text{-10-DTS-MMA}$	66	1.28	938	+ 0.0400	1157	2	5
$b\text{-CoAl}_2\text{O}_4\text{-0.5-HDTS-MMA}$	17	2.72	420	+ 0.0887	917	3	15
$b\text{-CoAl}_2\text{O}_4\text{-1-HDTS-MMA}$	71	1.22	943	+ 0.0240	803	22	52