Supporting information for the paper in the New Journal of Chemistry

Patterning of various materials by the photochemical reaction of $[CpFe(C_6H_6)]^+$ complex with salicylate dyes

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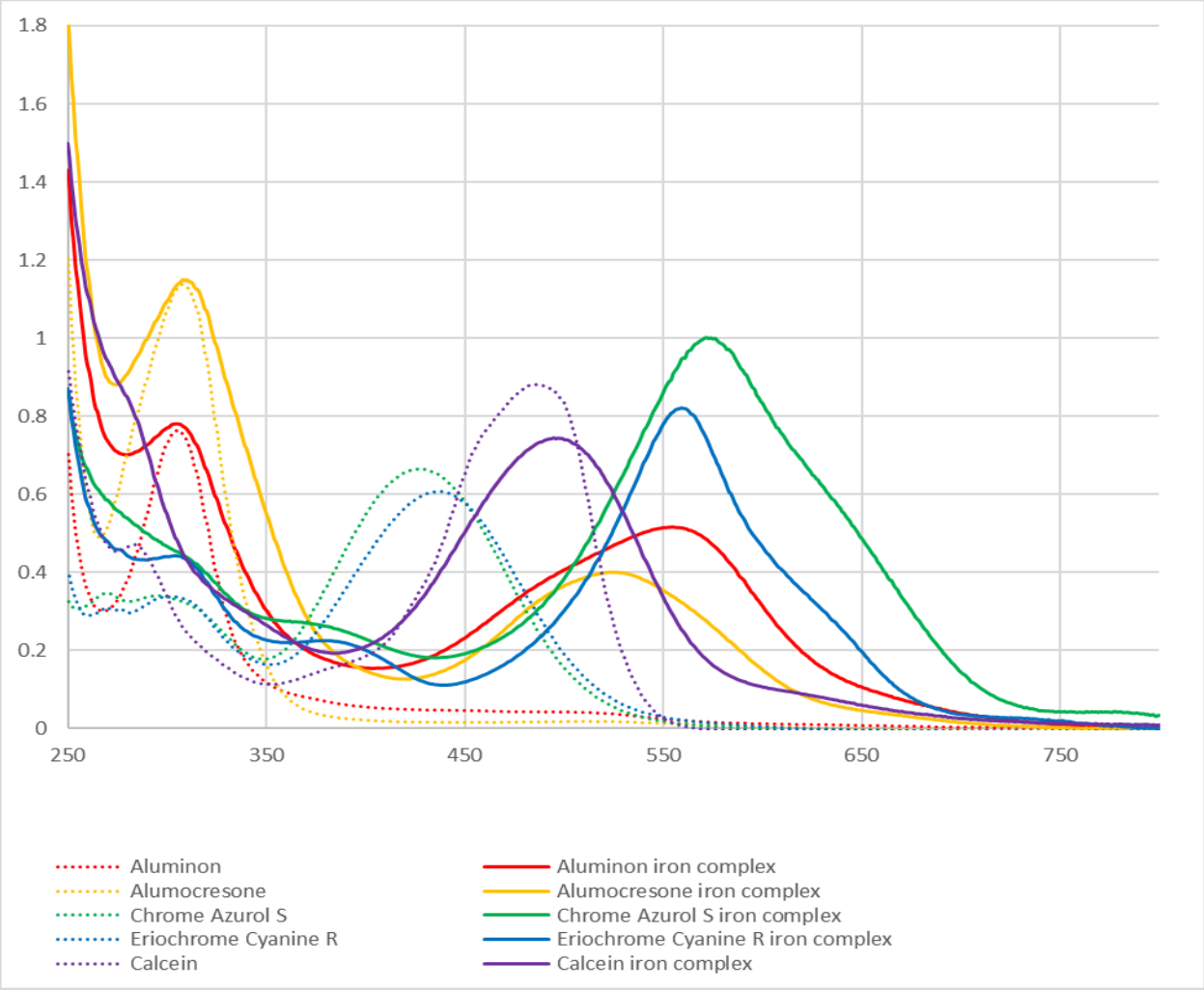
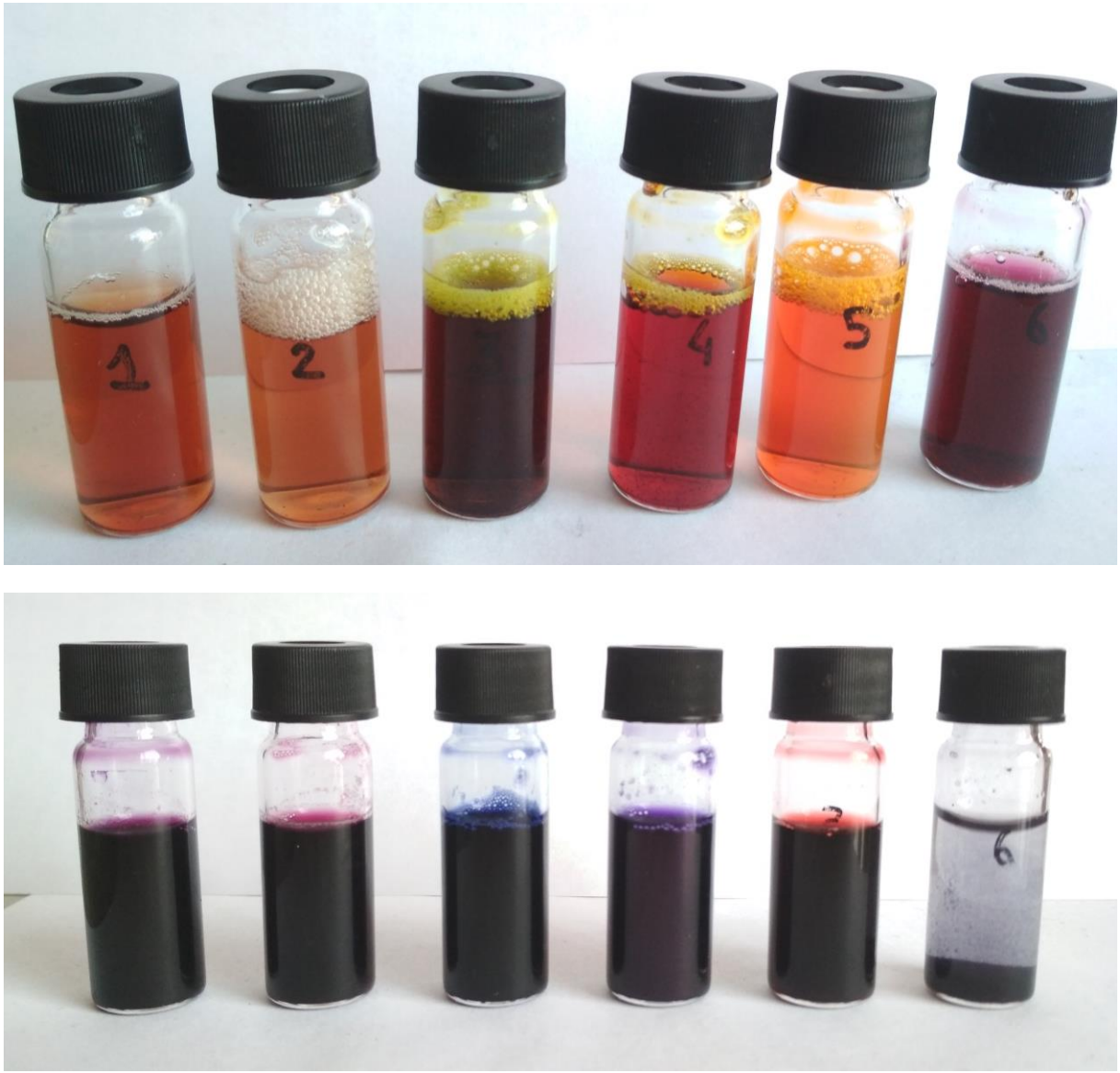
UV-visible spectra of aqueous solution (pH = 7) of the complex 1 and the corresponding dye before and after irradiation. 3.3 μM concentration of each reagent in quartz cell with 0.207 mm optical path.

Dye	Absorption (nm) / extinction (M^{-1} cm^{-1})	Dye	Absorption (nm) / extinction (M^{-1} cm^{-1})
Aluminon	306 / 11100	Aluminon iron complex	554 / 7500
Alumocresone	308 / 16500	Alumocresone iron complex	525 / 5800
Chrome Azurol S	426 / 9700	Chrome Azurol S iron complex	572 / 14500
Eriochrome Cyanine R	437 / 8800	Eriochrome Cyanine R iron complex	559 / 11900
Calcein	485 / 12800	Calcein iron complex	495 / 10800



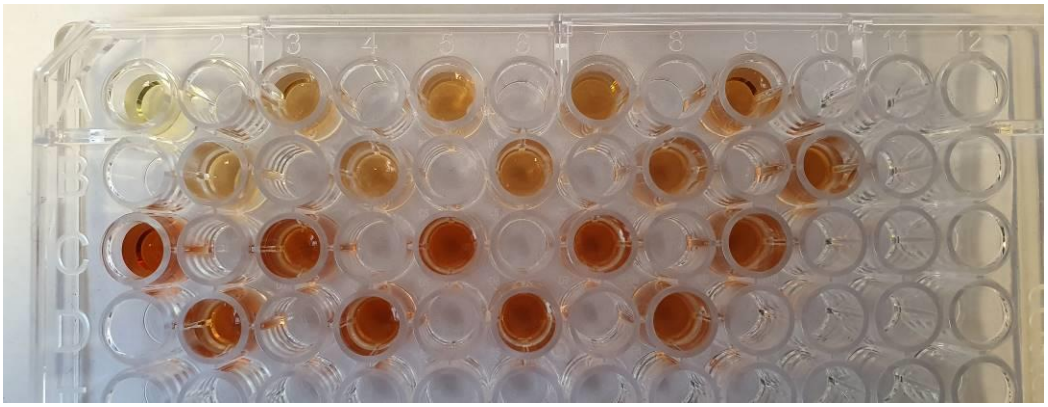
Aqueous solutions of the complex 1 and the corresponding dye (3.3 µM each) before irradiation (top) and after 5 h of irradiation (bottom). From left to right: Aluminon, Alumocresone, Chrome Azurol S, Eriochrome Cyanine R, Calcein, Alizarin Complexone.



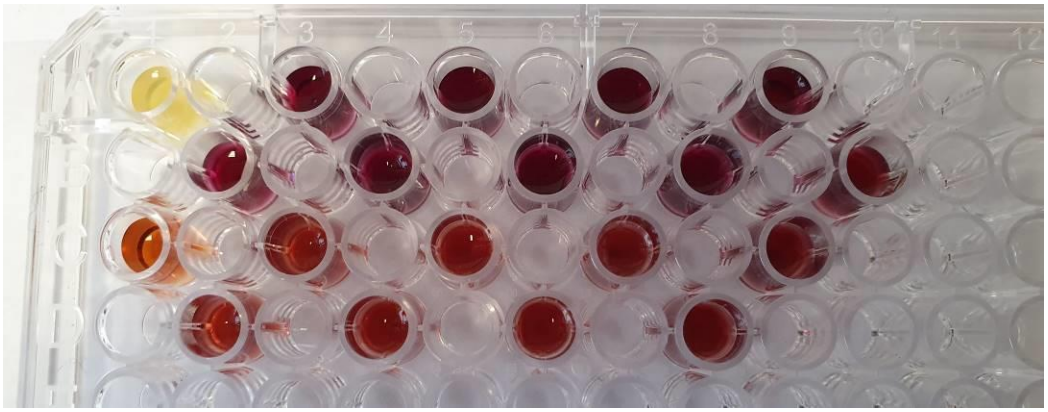
Color dependence on the ratio of reactants. Two stock solutions of $[CpFe(C_6H_6)]BF_4$ and Aluminon with concentrations 0.005 M were prepared. Then they were mixed in different ratios from 5:1 to 1:5 to form 200 µl solutions in a well plate according to the following scheme:

	1	2	3	4	5	6	7	8	9	10
A	1:0		4.5:1		3.5:1		2.5:1		1.5:1	
B		5:1		4:1		3:1		2:1		1:1
C	0:1		1:4.5		1:3.5		1:2.5		1:1.5	
D		1:5		1:4		1:3		1:2		

Irradiation time (t) = 0 min:



t = 20 min:

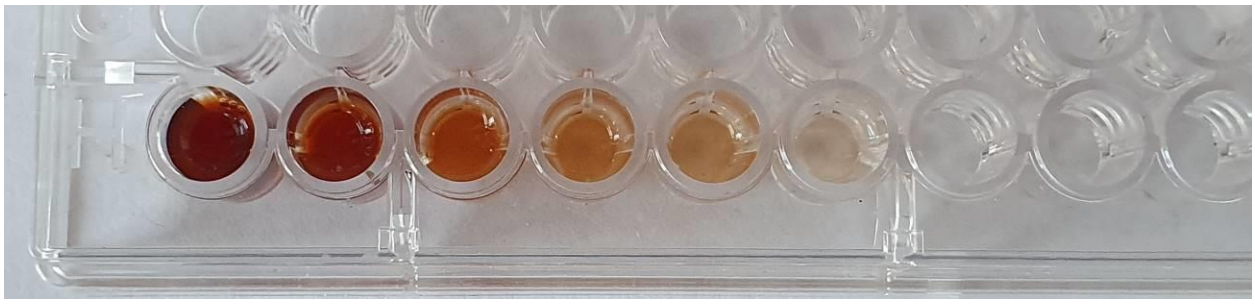


t = 40 min:

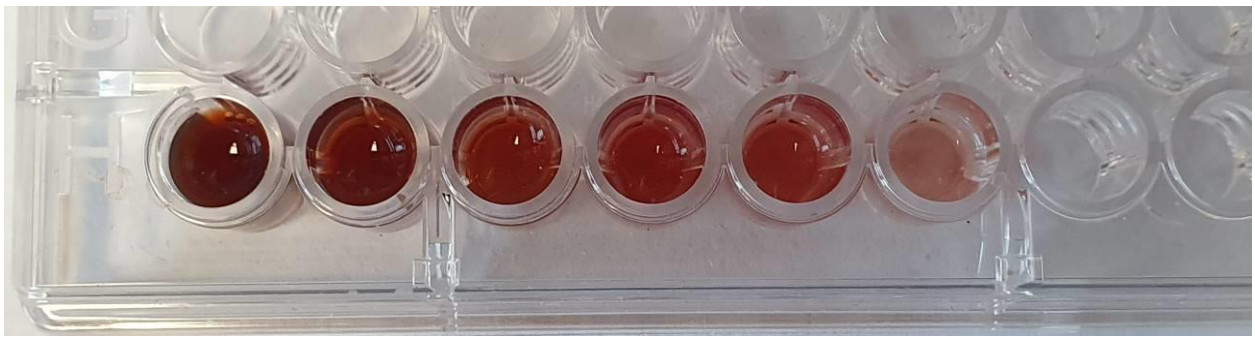
Color dependence on concentration. A solution of $[CpFe(C_6H_6)]BF_4$ (0.05 M) and Aluminon (0.017 M) was prepared. Then it was diluted in a well plate to produce solutions with concentration of iron from 0.05 to 0.001 M according to the following scheme:

	1	2	3	4	5	6
H	0.05 M	0.03 M	0.01 M	0.005 M	0.003 M	0.001 M

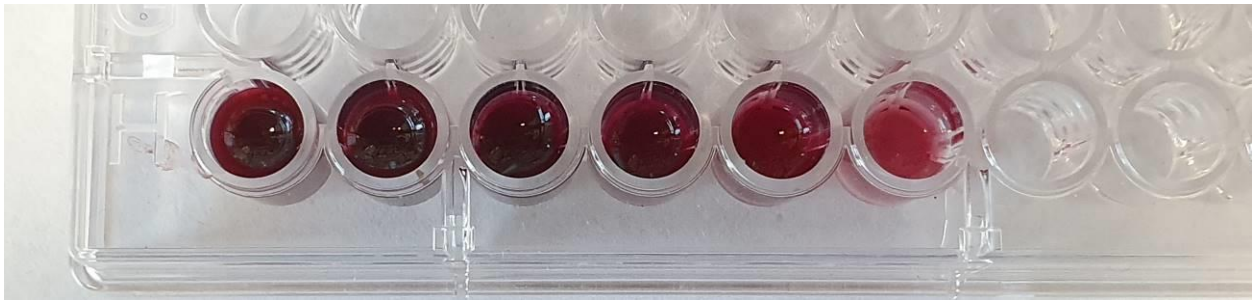
Irradiation time (t) = 0 min:



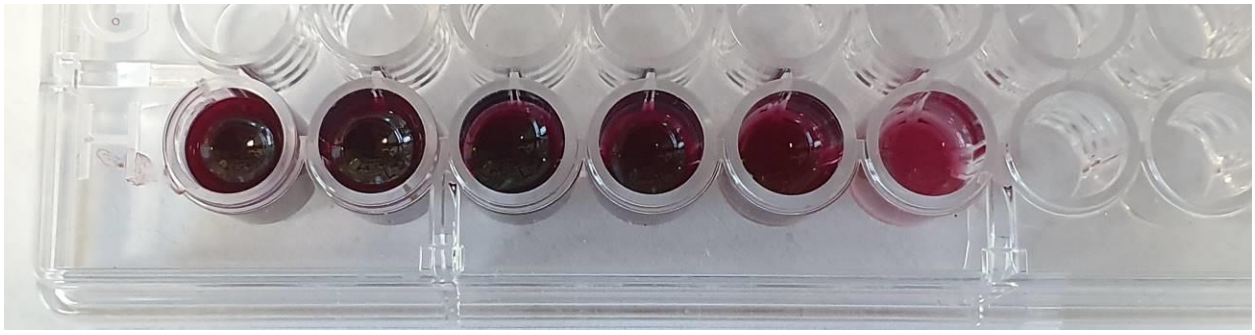
t = 2 min:



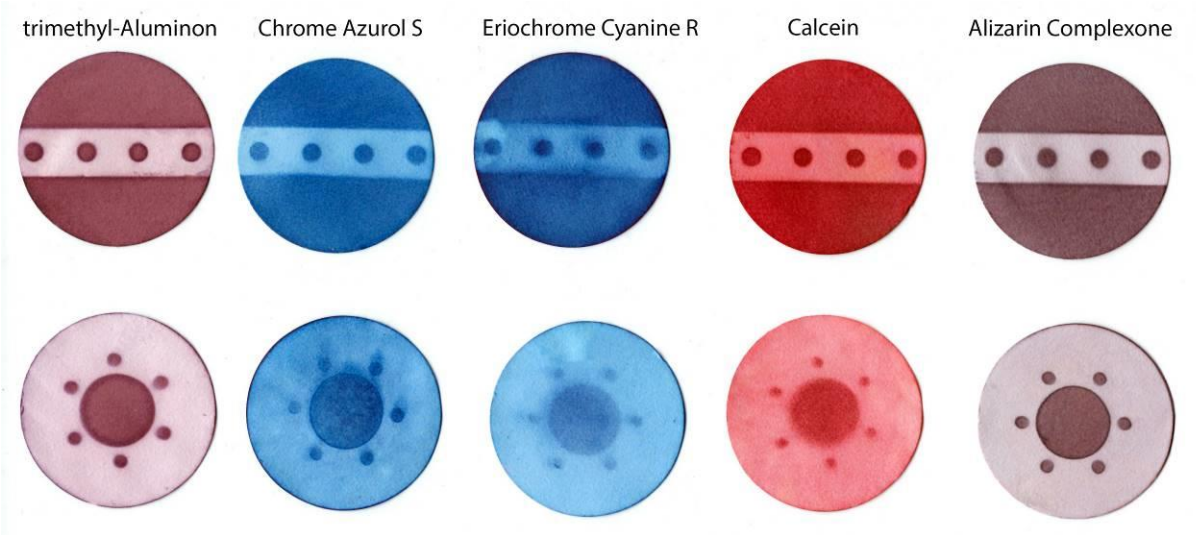
t = 10 min:



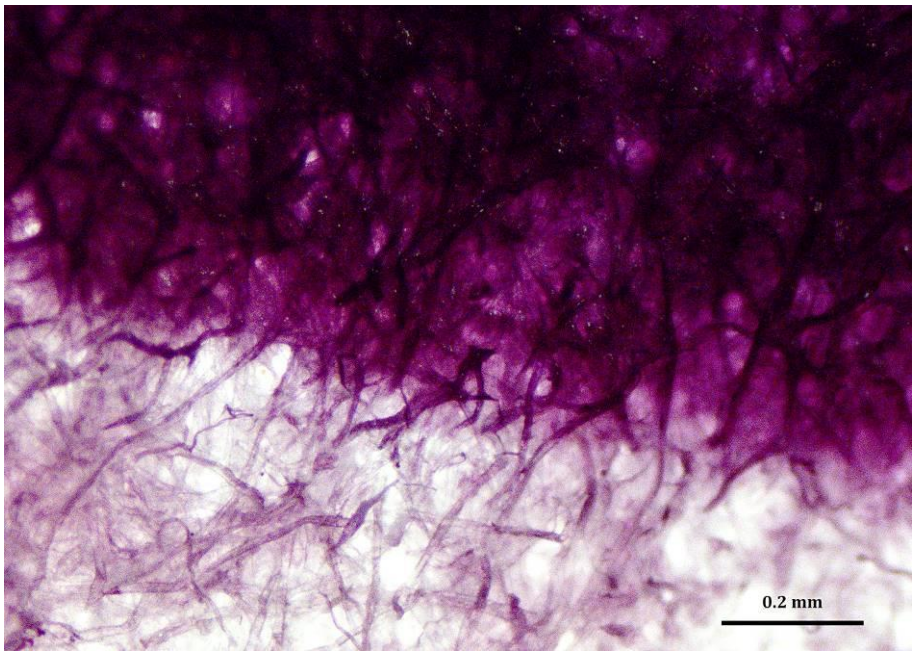
t = 20 min:



Photopatterning using different dyes. [CpFe(C_6H_6)]BF_4 (0.03 mmol, 8.5 mg) and a dye (0.01 mmol) were dissolved in 3 ml of water (in case of Alizarin Complexone a few drops of NH_3 solution were added to dissolve the ligand). Then the paper sample was soaked in this solution, dried by heating at 50 °C and irradiated through a stencil for 20 min. The obtained sample was washed with water for 5 min to remove unreacted complex and dye and dried by heating. Chrome Azurol and Eriochrome Cyanine R images can be further improved by careful washing with cold water.



Microscopy image of the patterned paper sample showing the border between the colored and non-colored areas.



Reproduction of photo on the cotton fabric by the complex 1 and Aluminon. The photo shows Belka and Strelka, the Soviet dogs that were the first animals to make orbital flight in space.