Redox reactions in Prussian blue containing paint layers as a result of light exposure

Louise Samain,¹,²* Bernard Gilbert,³ Fernande Grandjean,³,⁴ Gary J. Long,⁴* and David Strivay¹

¹Centre Européen d’Archéométrie, University of Liège, Sart Tilman B15, B-4000 Liège, Belgium
²Department of Materials and Environmental Chemistry, Stockholm University, Svante Arrhenius väg 16C, SE-106 91 Stockholm, Sweden. E-mail: louise.samain@mmk.su.se
³Faculty of Sciences, University of Liège, Sart Tilman B6, B-4000 Liège, Belgium
⁴Department of Chemistry, Missouri University of Science and Technology, University of Missouri, Rolla, MO, 65409-0010, USA. E-mail: glong@mst.edu

Figure S-1. Reflected light dark field illumination optical micrograph of a cross-section of the unexposed, a, and light exposed, b, Prussian blue 3 mixed with (PbCO₃)₂Pb(OH)₂ pigment in a 1:100 ratio. Both the unexposed and light exposed paint layers are homogeneously colored.
Figure S-2. The room temperature Mössbauer spectrum of Fe$^{III}$[Fe$^{III}$ (CN)$_6$] - 4H$_2$O, 5 as published in reference 1, upper spectrum, and with the corrected velocity scale, lower spectrum.

The upper spectrum shown in Figure S-2 was obtained from digitizing the spectrum shown in Figure 3 of reference S-1. The green and red solid lines were assigned$^{S-1}$ to low-spin iron(III) and high-spin iron(III), respectively. The lower spectrum shown in Figure S-2 was obtained from digitizing the spectrum provided$^{S-2}$ by Yusuf. The green and red solid lines are assigned to low-spin iron(II/III) and high-spin iron(III), respectively. The figure clearly emphasizes that the velocity scale used in the published$^{S-1}$ spectrum is incorrect. In addition, the 15 percent absorption observed at ca. zero velocity is too large and indicates that the absorber was too thick and as a consequence, the lines are not Lorentzian as would be clearly apparent in the residuals of the fit.
**Figure S-3.** The Mössbauer spectrum of Fe$_2^{II}$[Fe$^{II}$(CN)$_6$], 2, obtained$^{S-3}$ at 77 K. The green, blue, and black solid lines represent the low-spin iron(II), high-spin iron(II), and an impurity components, respectively.

**References**


(S-2) S. M. Yusuf, personal communication via e-mail, 5 February 2010.