



SDI Review Form 1.6

Journal Name:	International Research Journal of Pure and Applied Chemistry
Manuscript Number:	2014_IRJPAC_12248
Title of the Manuscript:	Chemical analysis of iron slags and metallic artefacts from Early Iron Age
Type of the Article	Original Research Article

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	The manuscript not presents innovative scientific aspects, but it is technically sound it achieves its intended purpose in the abstract. Therefore, the manuscript may be accepted for publication after serious major revision. First of all, it need to correct the English in the manuscript. • In abstract replace (Cr, Cu, Co, Ni, Zn) with (Cr, Cu, Co, Ni and Zn). • I suggest authors to insert a map which shows two sampling sites. • Fig. 3 shows the IR spectrum of the sample SP2-slag, Fig. 4 shows the sample SP2-slag, residue after dissolution in aqua regia and annealing at 800°C and Fig. 5 shows the comparative spectrum of SP2 sample before 315 and after dissolution and 316 annealing (red line before, green line after dissolution and annealing). Figure 3 and Figure 4 should be deleted since these are redundant. Figures 5 shows a comparison between the two IR spectra and the text has the comment of the variation of two IR spectra. After removed the two figures, the authors must comment best to variations between the two spectra. For example, absorption centred around at 778.48 cm⁻¹, at 1384.30 cm⁻¹ and at 2356 cm⁻¹.	• The corrections have been made • We are not able to provide a map with high quality and therefore we added to the text of the manuscript coordinates for the sampling sites. • We left only comparative spectra (in original manuscript Figure 5 in corrected Figure 3) according to suggestions of reviewer 3. We hope we improved the quality of the figure. Also we commented the difference requested by reviewer 3. Please find the changes highlighted by yellow in the revised manuscript. • The corrections have been made • The corrections have been made • The corrections have been made



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	- In the table 1 replace “dimensions/cm” with “dimensions (cm)”. In the table 2 replace “Weight percent/wt%” with “Concentration (% wt)”. In the table 2 replace “Concentrations (w/w)/ppm” with “Concentration (ppm)”. Lines 107-108: Delete the dimensions of the samples (... (dimensions 9.3 x 1.3 cm)... and ... (dimensions 6.2 x 1.2 cm)...) because are reported in table 1. - The labels Mp1 and Mp2 in figure 1 are not equal to table 1 (MpC1 and MpC2). The authors must make uniform, throughout the manuscript, the labels of the samples. Lines 146-148: The authors discuss the Lead and Cadmium, but these two metals were not analyzed in the work. Lines 157-159: The authors discuss the Lead and Cadmium, but these two metals were not analyzed in the work. Line 207: the sentence “concentrations of analysed slag samples are from 0.08-1.12 ppm” is true? or is it better the following sentence? “concentrations of analysed slag samples are from 0.06-1.12 ppm” is true? In table 2 are reported oxides and metals. Why? This is not correct since the analytical methods used in this manuscript allow to determine atomic concentrations. So, the experimental results should be	- Lead and cadmium have been analysed but since they are present in very low concentrations these elements have not been presented. - The corrections have been made - All elements (except Si) have been determined as atomic concentrations. Atomic concentrations have been recalculated into oxides because great number of authors (Buchwald and Wivel, 1998; Koustures et al., 2003; Kronz, 2003; Blakelock et al., 2009) presents their results as oxides, although using other techniques. For a discussion it is much better to present result as oxides because slag is a system where oxides of Ca, Na, K, Mg, Al, Mn, Fe, and Si play an important role and help us to better understand processes of metal production in the past. The reason for presenting iron as FeO lies in the fact that the process of refining iron was still underdeveloped and the reached temperature was not sufficient for high-quality ore reduction process starting from the Fe₂O₃ to the metallic iron. This caused less reductive conditions (less reduction power of CO/CO₂ gas system). In such conditions, the process of transition of FeO to Fe was not enough efficient, resulting in a slag containing higher amounts of FeO than is the case with the slags that are now obtained as by-products in iron production.
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	summarized as elements in table 2 and in the text of manuscript. Only SiO₂ could be considered as such. Moreover, in Table 2 is written FeO, but could be Fe₂O₃? In the table 3 replace “Weight percent/wt%” with “Concentration (% wt)”. In the table 3 replace “Concentrations (w/w)/ppm” with “Concentration (ppm)”. Lines 372-374: Replace “2010;45:632-634” with “2010;48:632-634.”.	Other authors (Koustures et al., 2003; Kronz, 2003; Paynter, 2006) also present results as FeO, rather than Fe₂O₃. The corrections have been made
<u>Minor</u> REVISION comments	In figure 2 the authors must write the subscripts (SiO₂, Al₂O₃, ...). Standardize the references (authors, year, p., etc.) as required from the Editor.	The corrections have been made
<u>Optional/General</u> comments		