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Proceedings, Abstract

Technological conditions control for obtaining the metallic component from the M-C prosthetic restorations, by scanning electron microscopy and EDAX analysis

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The alloys used in the metal-ceramic technology are noble alloys based on gold (eg Au-Pd, Au-Pd-Ag), noble alloys based on palladium (eg Pd-Ag, Pd-Cu) and non-noble alloys (ex. Ni-Cr, Co-Cr, Fe-Cr, Ti alloys, Cu-alloys, etc) as an alternative to noble alloys that have become expensive and inaccessible. The metallic structure must be precise, without casting defects that will influence the adhesion after sintering of the overlying ceramic mass. The research carried out highlights the causes that favor the occurrence of defects during the stages of the metallic component processing (from the melting to the casting) of the alloy, using electron microscopy analysis of samples from non-noble alloys (e.g. Cu alloys) taken from the casting network, channels and crowns. Point analysis in the base mass indicates the initial composition [3] of the alloy within the limits indicated by the standard. In the same samples (taken from the casting network) there are also discontinuities of materials, respectively microrets, which means that the alloy was cast at a low temperature. The experimental results easily demonstrate both the technological moment / stage in which the purity of the alloy worsens, the material defects in the initial state or any defects that occurred during the smelting - casting operations. EDX Spectroscopy Analysis on samples taken from the crown, from all alloys (but especially copper based alloys) confirms the presence of impurities (mainly oxides), proof of the long-standing contact with the atmosphere of the alloy during processing [1,3].

Keywords: *SEM, EDAX, metallic structure, metal component.*

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Conflicts of Interest
The authors declare no conflict of interest.

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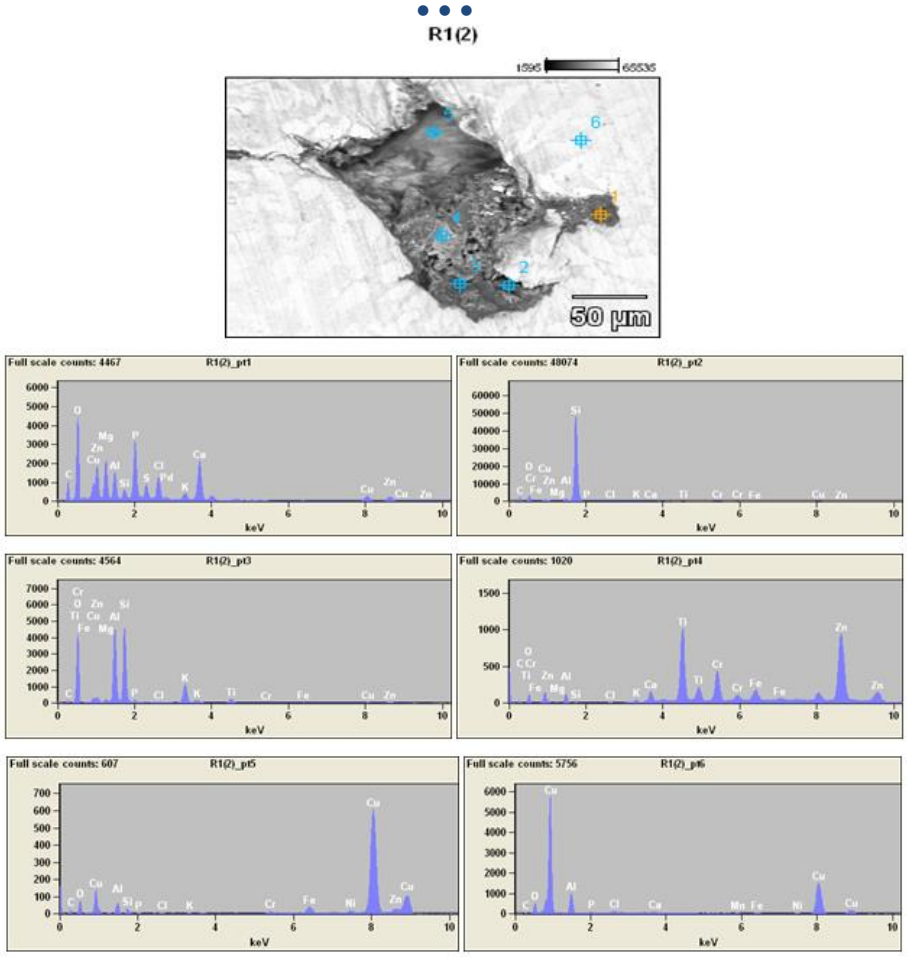

Weight %

	C-K	*O-K*	*Mg-K*	*Al-K*	*P-K*	*S-K*	Cl-K	K-K	Ca-K	Ti-K	Cr-K	Mn-K	Fe-K	Ni-K	Cu-K	Zn-K	Pd-K
R1(2)_pt1	12.42	50.16	4,90	2,91	6.12	1,46	2,83	1.02	6,99	-	-	-	-	-	**4,60**	5,43	0,17
R1(2)_pt2	28.95	25,68	0,11	0,70	0,31	-	0,54	0,23	0,17	0,11	2,10	-	0,28	-	**1,62**	0,82	-
R1(2)_pt3	5.46	53.66	0,32	12,16	0,59	-	0,16	5,07	-	1,71	0,25	-	0,57	-	**1,85**	3,60	-
R1(2)_pt4	2,73	5,70	0,23	1,31	-	-	0,12	0,23	1,29	14,90	8,53	-	3,81	-	-	60,87	-
R1(2)_pt5	4,13	6,23	-	1,68	0,21	-	0,15	0,11	-	-	0,57	-	2,15	1,34	**80,70**	2,07	-
R1(2)_pt6	4,14	11.71	-	9,48	0,22	-	0,41		0.25	-	-	0,34	0,89	1,44	**71,14**	-	-

Figure 1. X-ray Spectroscopic analysis of chemical composition of samples of Co-Cr alloy (ADORON LX40626), the sample taken from casting network [1].

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