

# DIFFERENT COBALT CHROMIUM DENTAL ALLOYS' BIOCOMPATIBILITY AND MECHANICAL CHARACTERISTICS

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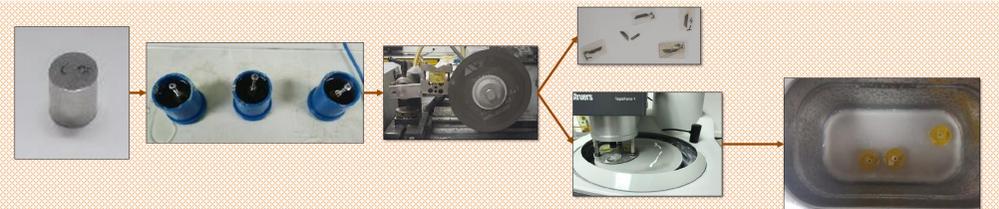
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## ABSTRACT

Three Co-Cr based alloys with varying concentrations, labeled Co-Cr, C, and L, which will be used as dental materials, have been examined and evaluated using metallographic, electrochemical, and three-point bending tests. Metallographic examination revealed porosities and flaws in the Co-Cr and L samples, as well as comparable dendritic structures of the dental alloys. Corrosion and pitting potential results revealed surface passivation of the samples. The corrosion resistance for sample L was also somewhat greater when using the Electrochemical Impedance Spectroscopy approach, since corrosion becomes more pronounced the more positively the applied potential is shifted, as well as the higher the impedance and phase angle values. However, alloy C, has the lowest modulus of elasticity values in the three-point bending test.

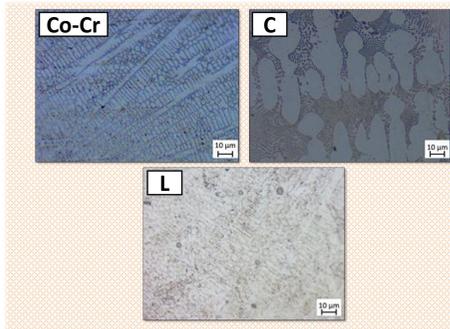
## SAMPLES PREPARATION

Alloy	Composition (in wt.%)											
	Co	Cr	Mo	W	Nb	V	Si	Mn	Fe	C	N	Ni
CoCr	64.8	28.0	5.0	-	-	-	<0.1	<0.1	-	<0.1	<0.1	<0.1
L	62.5	30.5	5.0	-	-	-	1.0	0.4	-	0.3	0.3	-
C	59.4	24.5	1.0	10.0	2.0	2.0	1.0	-	0.1	-	-	-



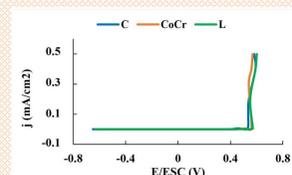
## RESULTS OBTAINED

### MICROSTRUCTURAL CHARACTERIZATION

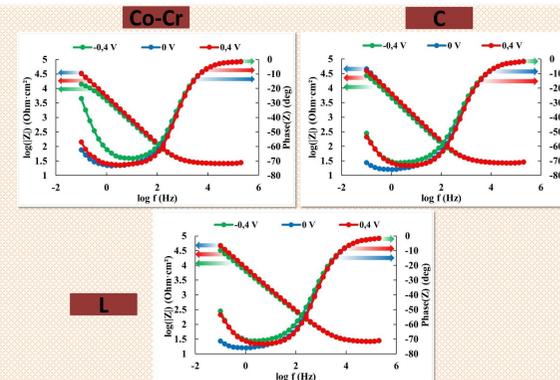
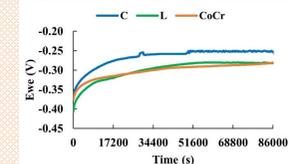


### ELECTROCHEMICAL TESTS

#### CORROSION POTENTIAL



#### PITTING POTENTIAL



### THREE-POINT BENDING TEST

Sample	E Average (GPa)
CoCr	175 ± 17
C	134 ± 13
L	148 ± 19