

Appendix E4

SEM/EDS Data for Test #3 Day-30 Steel Coupons

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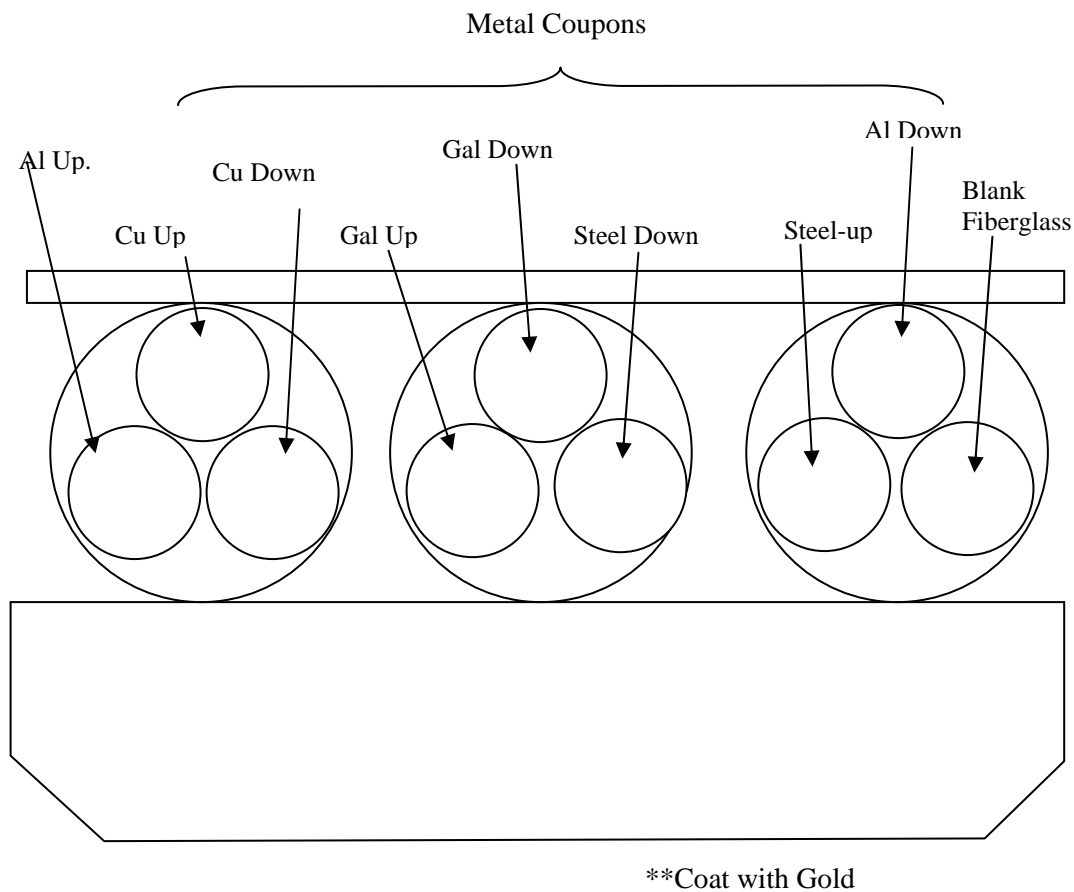
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This appendix shows the SEM/EDS results for the metal steel coupons under two categories: (1) suspended; (2) submerged. Suspended refers to coupons located above the water level of the solution during ICET tests. Suspended coupons were only contacted with the solution during the 4-hour spraying period at the initial date of the test. In addition, the surface of the suspended coupons may also be affected by the moisture in the test chamber gas space during the test. Submerged refers to the coupons that were submerged in the solution during the test.

The coupon samples were collected on the date that Test #3 was shut down, May 5, 2005. The steel coupon samples were dried in air before coating with Au/Pd for SEM examination. SEM results present the surface condition of the steel coupons. In addition, EDS results provide a semi-quantitative elemental analysis of the coupon surface and the corrosion products. Available logbook entries for this laboratory session are included in this appendix as transcribed notes.

Transcribed Laboratory Log

Laboratory session from May 17, 2005.
 Test #3 Day-30 Metal Coupons



Suspended Steel

Image:	T3D30SteelSusp033	100 ×	SEM image	Figure E4-1
	T3D30SteelSusp033	100 ×	Annotated SEM image	Figure E4-2
EDS:	T3D30SuspSteel19		Convex on 033	Figure E4-3
	T3D30SuspSteel21		White flat surface on 033	Figure E4-4
Image:	T3D30SteelSusp034	100 ×	Backscattered	Figure E4-5
	T3D30SteelSusp034	100 ×	Annotated backscatter image	Figure E4-6
EDS:	T3D30SuspSteel20		Dark particle on 034	Figure E4-7
Image:	T3D30SteelSusp035	1000 ×		Figure E4-8

Submerged Steel

Image:	T3D30SteelSubm015	100 ×		Figure E4-9
	T3D30SteelSubm016	100 ×	Backscattered image	Figure E4-10
	T3D30SteelSubm016	100 ×	Annotated backscattered image	Figure E4-11
EDS:	T3D30SubmSteel13		Dark spot on 016	Figure E4-12
	T3D30SubmSteel14		White spot on 016	Figure E4-13
Image:	T3D30SteelSubm017	1000 ×		Figure E4-14

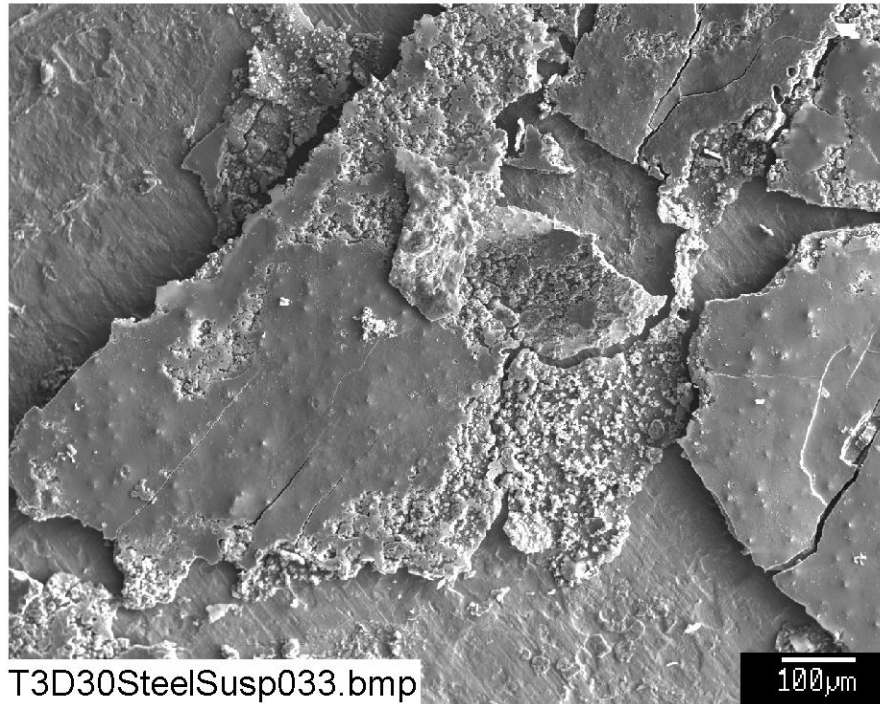


Figure E4-1: SEM image magnified 100 times for a Test #3 Day-30 suspended carbon steel coupon. (T3D30SteelSusp033)

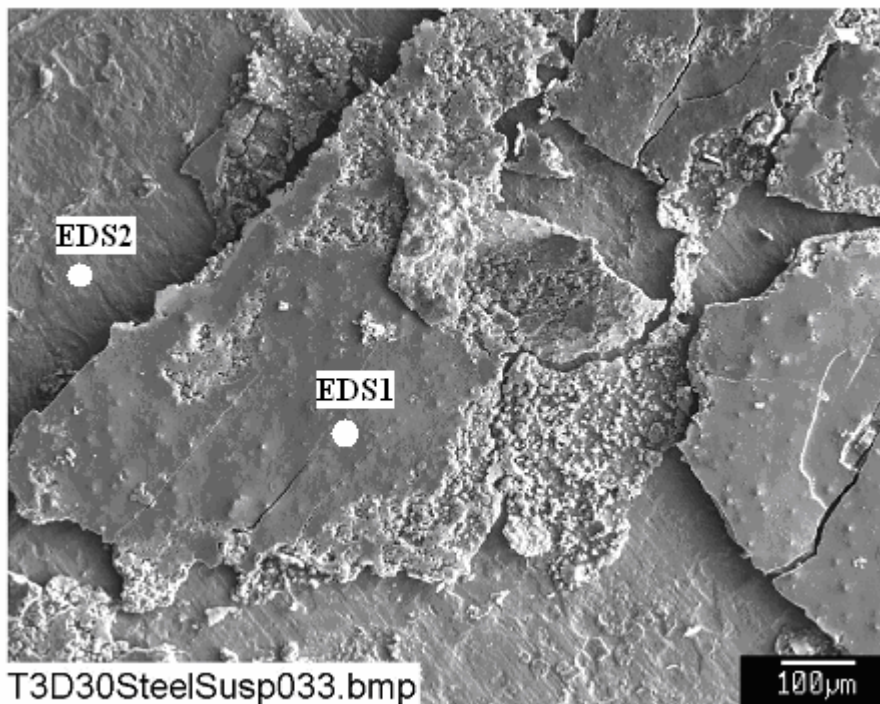
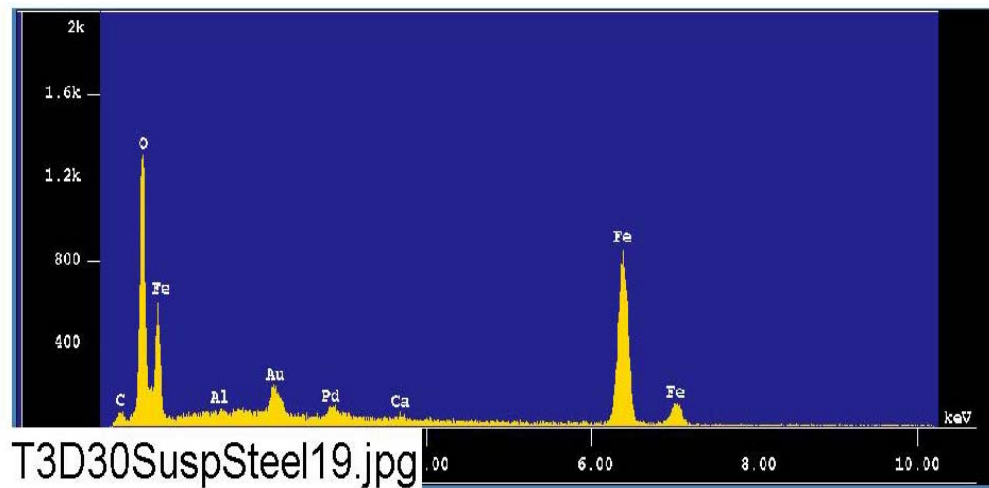
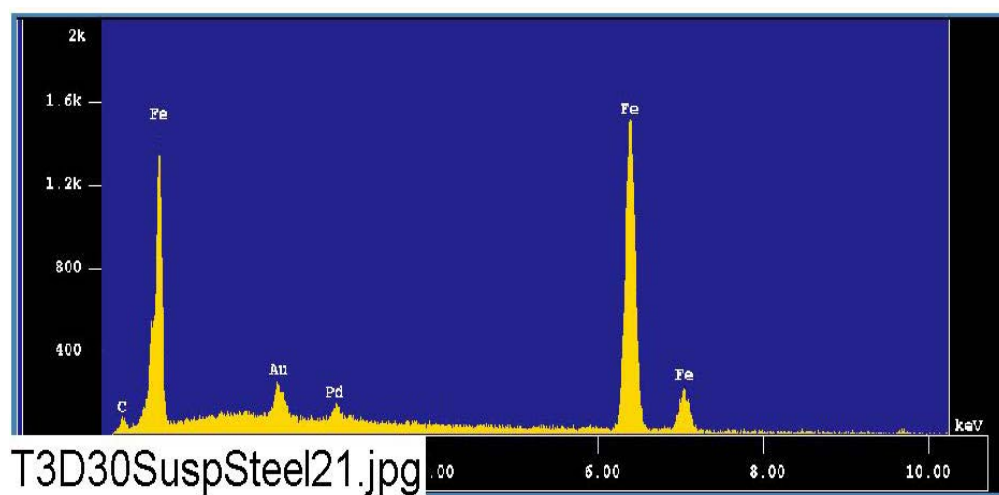


Figure E4-2: Annotated SEM image magnified 100 times for a Test #3 Day-30 suspended carbon steel coupon. (T3D30SteelSusp033)



**Figure E4-3: EDS counting spectrum for the convex surface (EDS1) shown in Figure E4-2.
(T3D30SuspSteel19)**



**Figure E4-4: EDS counting spectrum for the lower surface (EDS2) shown in Figure E4-2.
(T3D30SuspSteel21)**

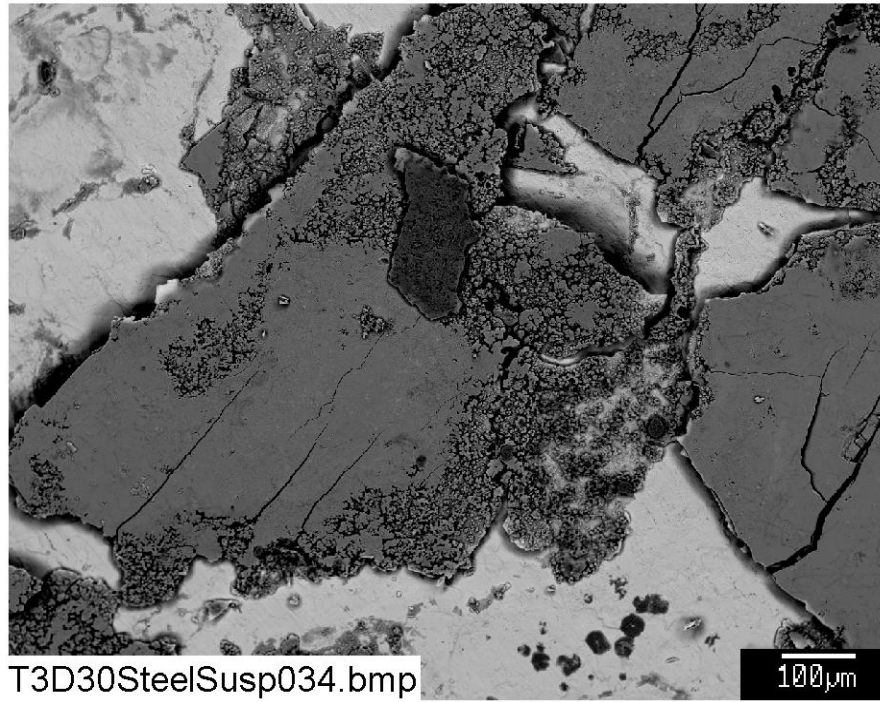


Figure E4-5: Backscattered SEM image magnified 100 times for a Test #3 Day-30 suspended steel coupon. (T3D30SteelSusp034)

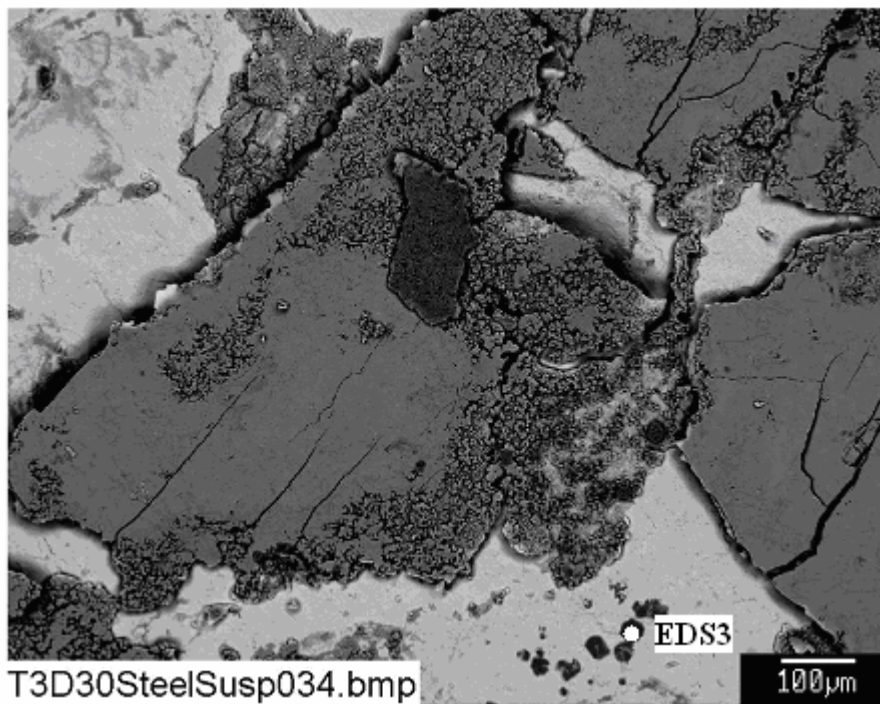


Figure E4-6: Annotated backscattered SEM image magnified 100 times for a Test #3 Day-30 suspended steel coupon. (T3D30SteelSusp034)

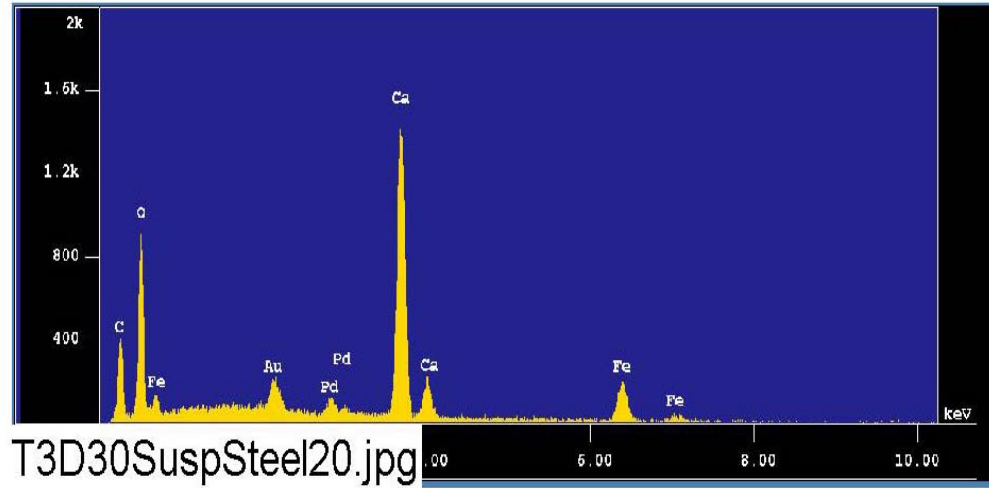


Figure E4-7: EDS counting spectrum for a dark particle close to the lower edge (EDS3) of Figure E4-6. (T3D30SuspSteel20)

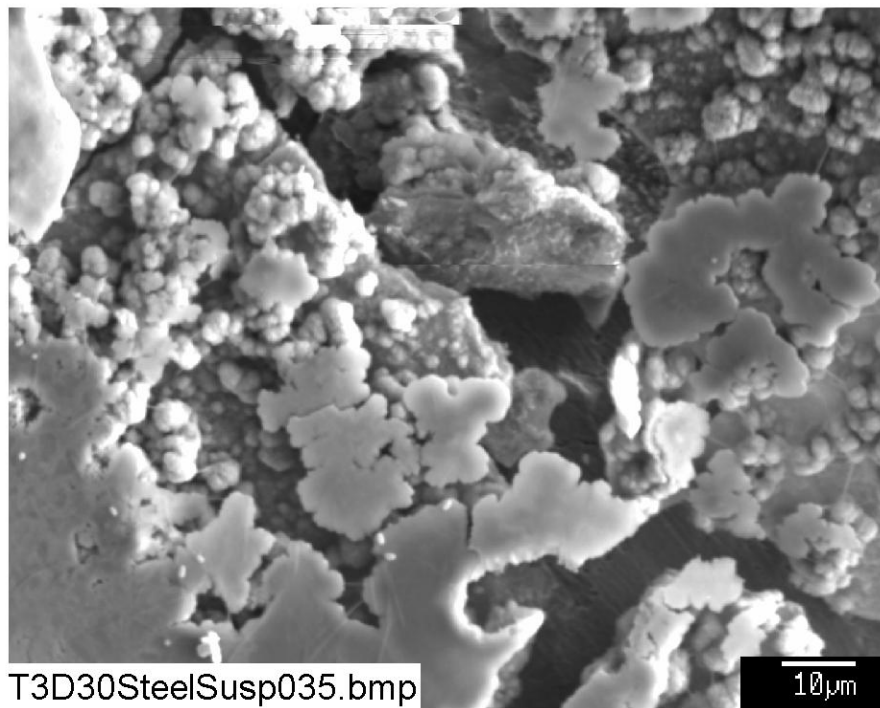


Figure E4-8: SEM image magnified 1000 times for a Test #3 Day-30 suspended carbon steel coupon. (T3D30SteelSusp035)

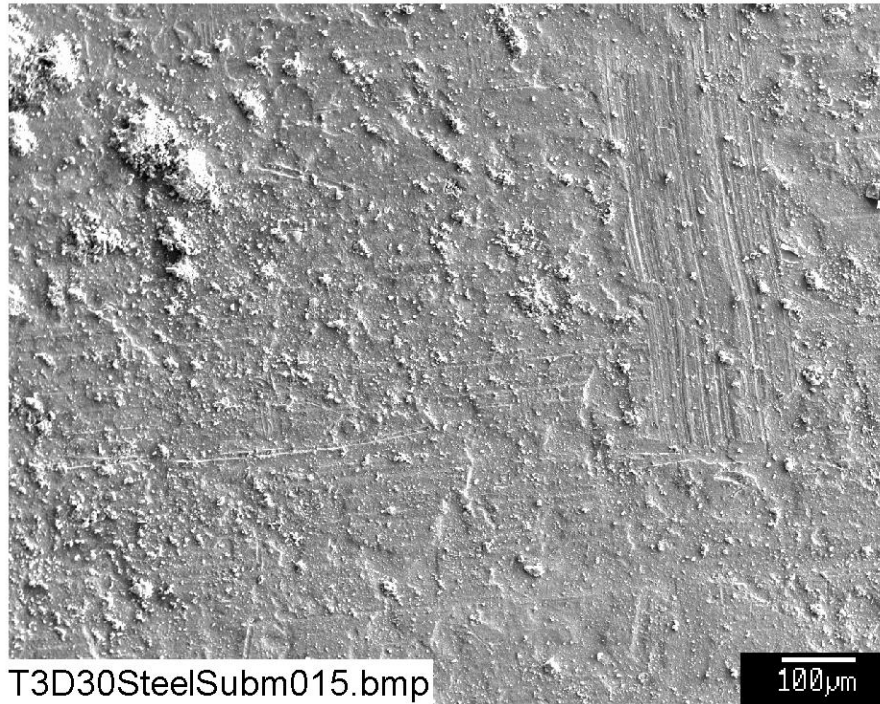


Figure E4-9: SEM image magnified 100 times for a Test #3 Day-30 submerged carbon steel coupon. (T3D30SteelSubm015)

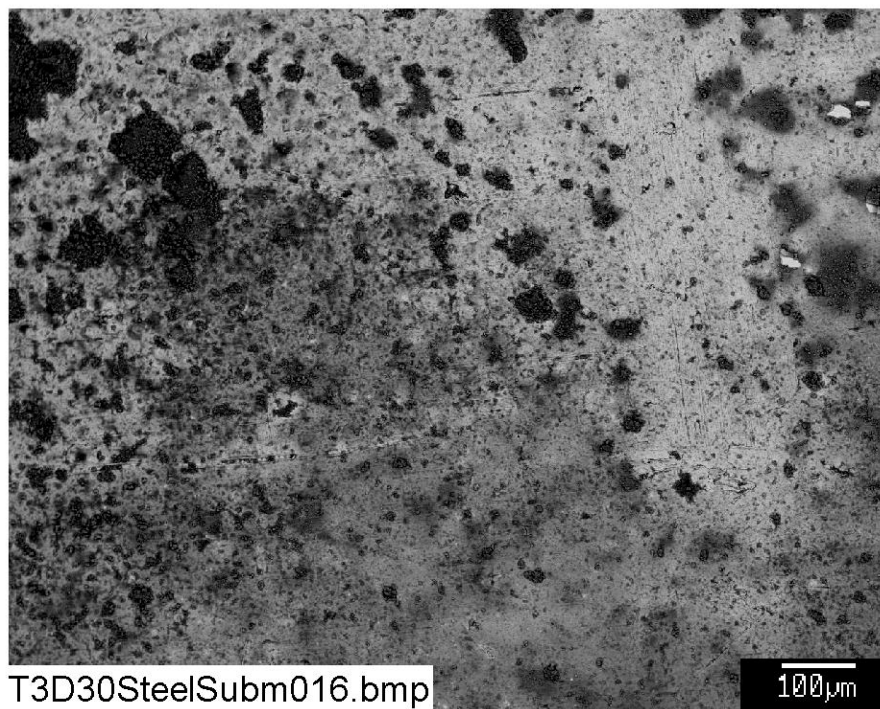


Figure E4-10: Backscattered SEM image magnified 100 times for a Test #3 Day-30 submerged carbon steel coupon. (T3D30SteelSubm016)

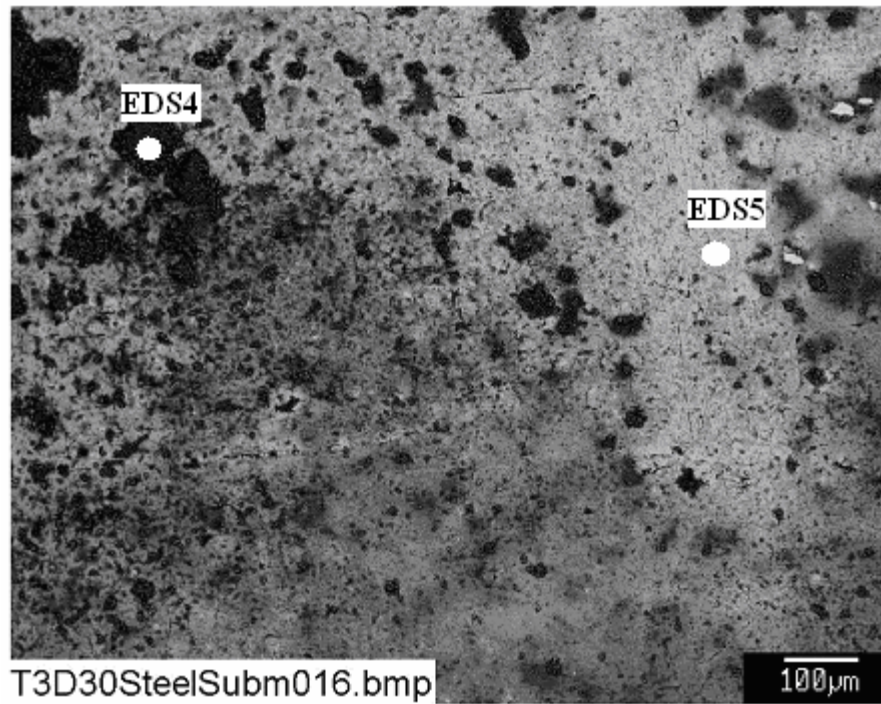


Figure E4-11: Annotated backscattered SEM image magnified 100 times for a Test #3 Day-30 submerged carbon steel coupon. (T3D30SteelSubm016)

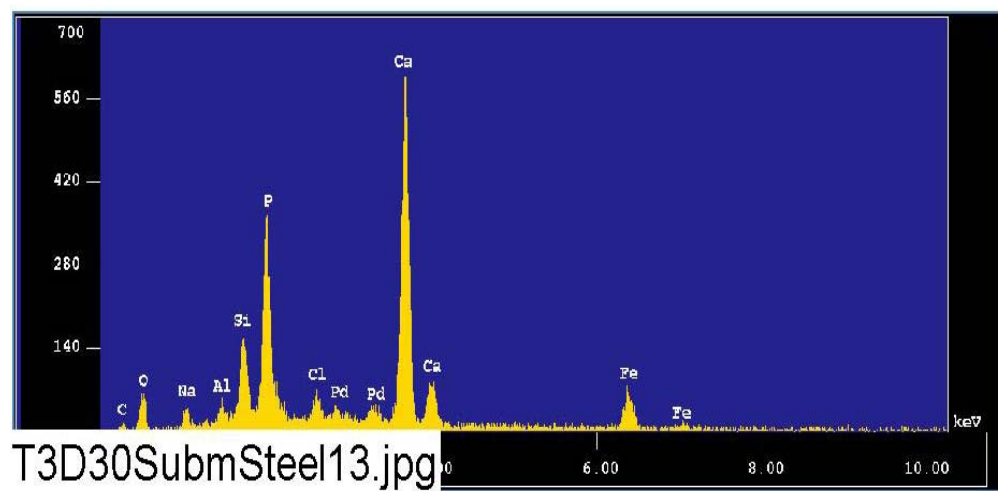


Figure E4-12: EDS counting spectrum for a dark spot (EDS4) shown in Figure E4-11. (T3D30SubmSteel13)

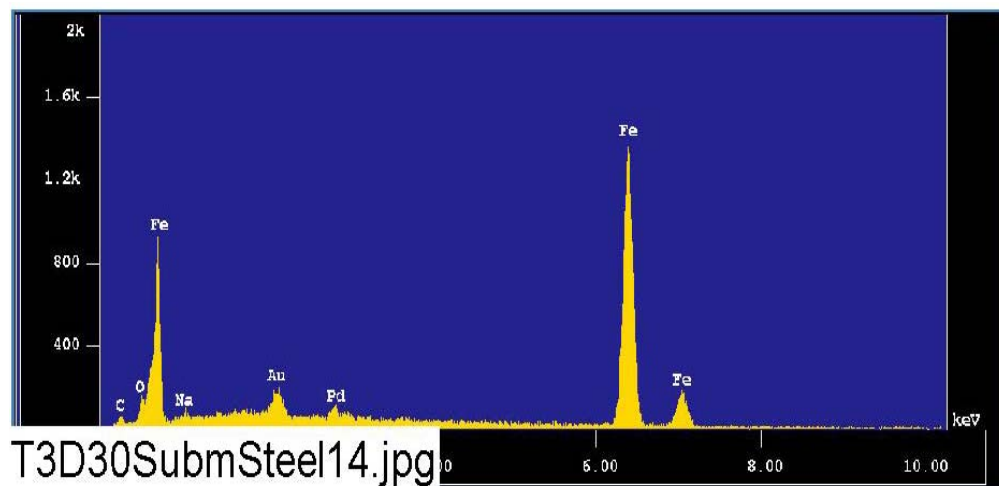


Figure E4-13: EDS counting spectrum for a light spot (EDS5) shown in Figure E4-11. (T3D30SubmSteel14)

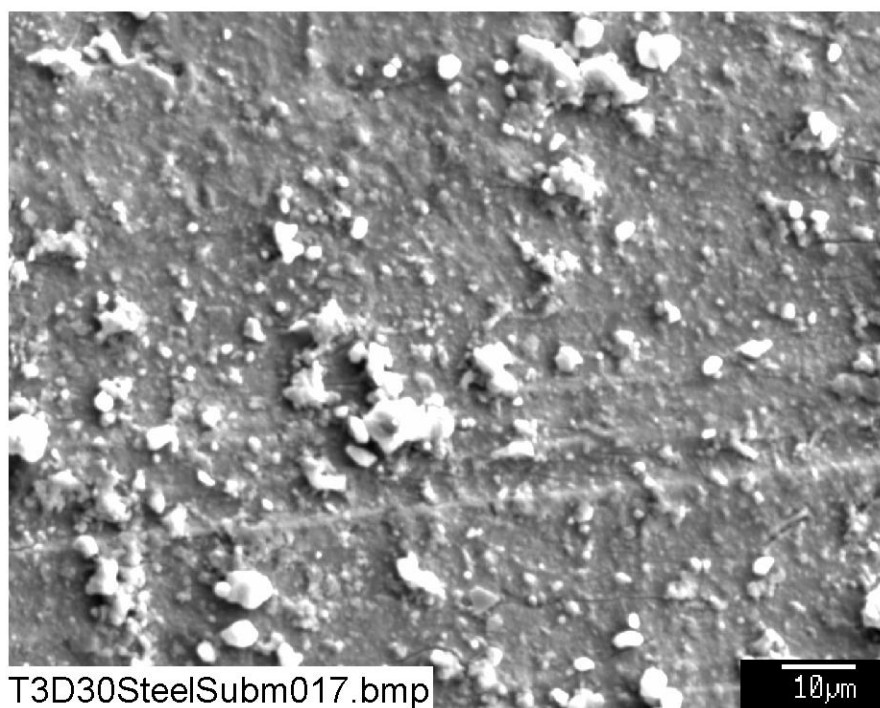


Figure E4-14: SEM image magnified 1000 times for a Test #3 Day-30 submerged carbon steel coupon. (T3D30SteelSubm017)