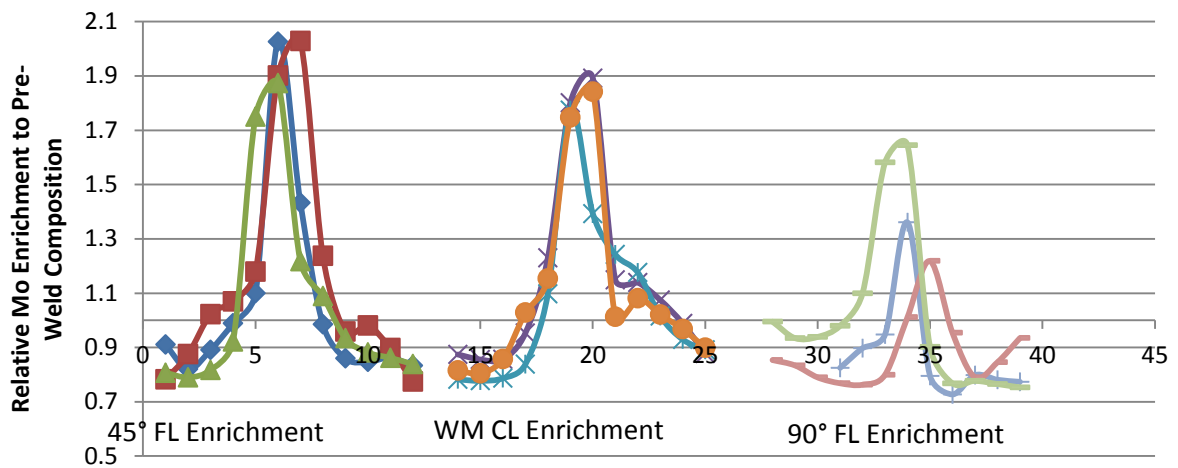


## Supplementary Material 1

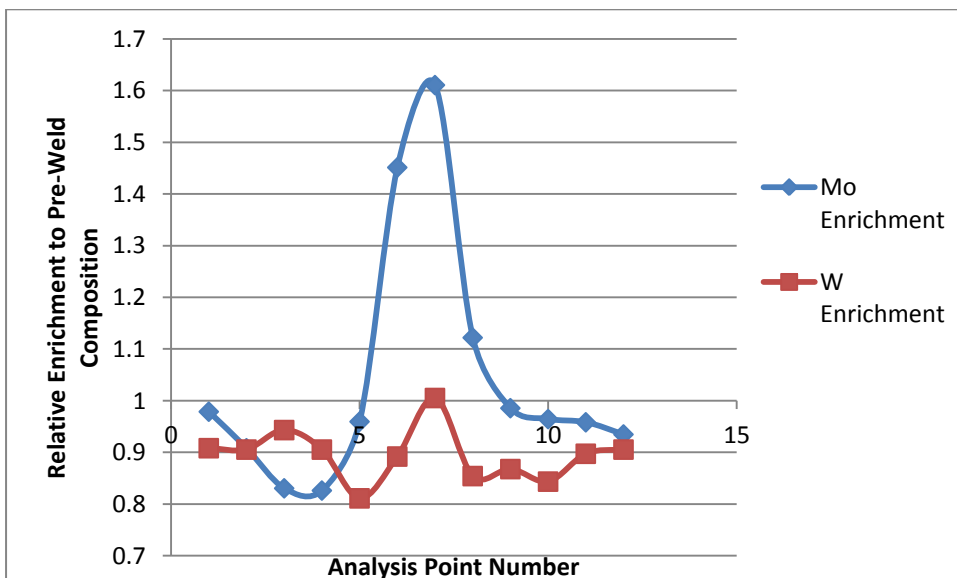
### IN625 Micrographs



### IN686CPT Eutectic EDS Analysis - Relative Molybdenum Enrichment



### IN686CPT Globular Eutectic EDS Analysis



### *Charpy Impact Testing Results*

Charpy ID	Location	Filler Metal	Test Temp	Energy Absorbed			Average Energy Absorbed
				A	B	C	
554	WM CL	IN625	-40	148	154	142	<b>148.00</b>
555	WM CL	IN625	-40	156	136	152	<b>148.00</b>
556	45 FL	IN625	-40	122	131	222	<b>158.33</b>
557	45 FL	IN625	-40	131	148	232	<b>170.33</b>
558	90 FL	IN686CPT	-40	217	166	232	<b>205.00</b>
559	90 FL	IN686CPT	-40	186	178	177	<b>180.33</b>
691	90 FL	IN686CPT	-40	86	210	72	<b>122.67</b>
692	90 FL	IN686CPT	-40	186	186	120	<b>164.00</b>
703	WM CL	IN686CPT	-40	128	132	130	<b>130.00</b>
704	WM CL	IN686CPT	-40	120	118	126	<b>121.33</b>
571	90 FL	IN625	-40	181	246	234	<b>220.33</b>
572	90 FL	IN625	-40	144	222	235	<b>200.33</b>
573	90 FL	IN625	-40	222	168	150	<b>180.00</b>
574	90 FL	IN625	-40	224	126	200	<b>183.33</b>
575	45 FL	IN686CPT	-40	90	61	170	<b>107.00</b>
576	45 FL	IN686CPT	-40	222	100	182	<b>168.00</b>