




Melt Separation

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Drawings:

Corel Draw (CDR 10 or earlier)

or Adobe Illustrator (AI 9 or earlier)

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Material: Cu-10wt.% Co

Bulk supercooling of Cu-10wt.% Co alloy below a certain temperature resulted in melt separation into two liquids: L1, which is Cobalt rich and L2, which is Copper rich.

In the enclosed micrograph one can see a spherical Cobalt rich phase (L1) that was probably first to solidify surrounded by a peritectic copper matrix and primary Cobalt dendrites "pointing" outward.

Specimen preparation

After cutting and embedding using EpoFix cold mounting, the specimen was prepolished and final polished manually in five steps.

Step	Surface	Abrasive/Size	Base Speed	Lubricant
1	SiC	SiC / #320	300 rpm	Water
2	SiC	SiC / #1200	300 rpm	Water
3	SiC	SiC / #4000	150 rpm	Water
4	MD-Dac	DP-P / 3µm	150 rpm	Red
5	MD-Chem	OP-S / 0.04µm	150 rpm	

After each step the sample was checked using optical microscopy to be sure that all scratches from the previous step were removed.

Finally, the specimen was etched by immersion at room temperature for about 3 seconds in:

$FeCl_3$ - 5 gr

C_2H_5OH - 100 ml

HCl - 20 ml

Cleaned in water and dried with hot air.

