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Structural Funds
2007-2013



ECOSOLDER

Romania - Republic of Serbia IPA Cross-border Cooperation Programme

Promoting new ecologic filler alloys
for soldering, based on the non-ferrous ore of
the Romanian-Serbian cross-border area

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Common borders. Common solutions.



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SOME ASPECTS OF Sn-In-Cu ECOLOGICAL SOLDER ALLOYS

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INTRODUCTION

- FIND A SUBSTITUTE FOR COMMON SOLDERS
- LEAD-FREE
- CADMIUM FREE
- WEEE AND ROHS



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INTRODUCTION AND REQUIREMENTS

- Availability
- No Toxicity
- Melting temperature range
- Wettability
- Other process conditions



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INITIAL DATA FOR Sn-In-Cu ALLOYS

alloy	Xi			at %		
	Sn	In	Cu	Sn	In	Cu
L1	0.5	0.45	0.05	50	45	5
L2	0.6	0.36	0.04	60	36	4
L3	0.7	0.27	0.03	70	27	3
L4	0.8	0.18	0.02	80	18	2
L5	0.9	0.09	0.01	90	9	1



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RESULTS

Alloy	Temperature, K
Sn50In45Cu5	390
Sn60In36Cu4	390,431
Sn70In27Cu3	391,455
Sn80In18Cu2	472

Characteristic
temperatures
of Sn-In-Cu
investigated alloys



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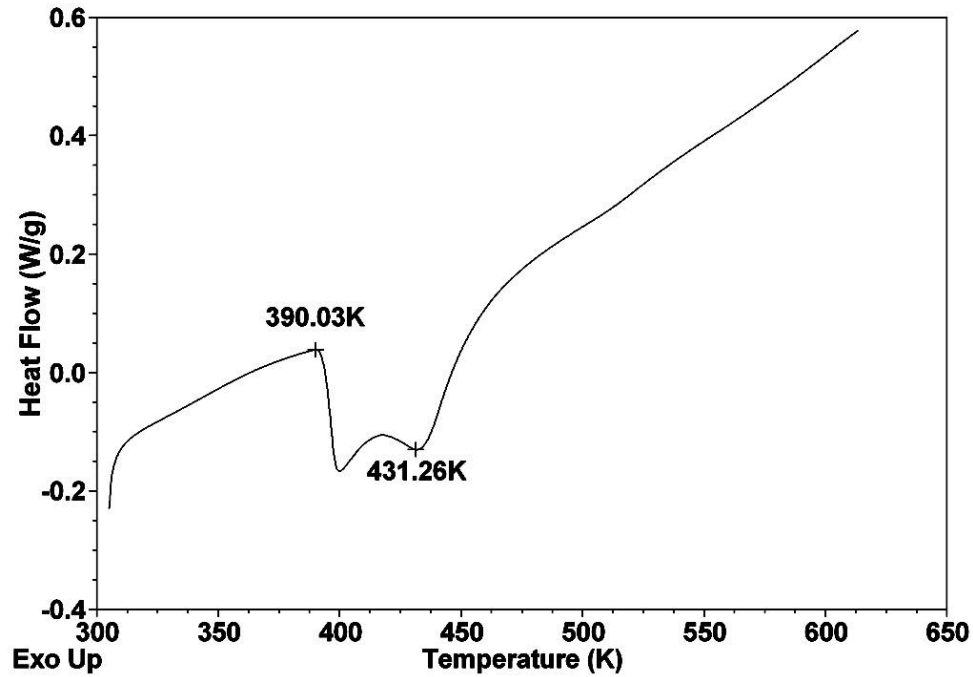


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Alloy Sn60In36Cu4



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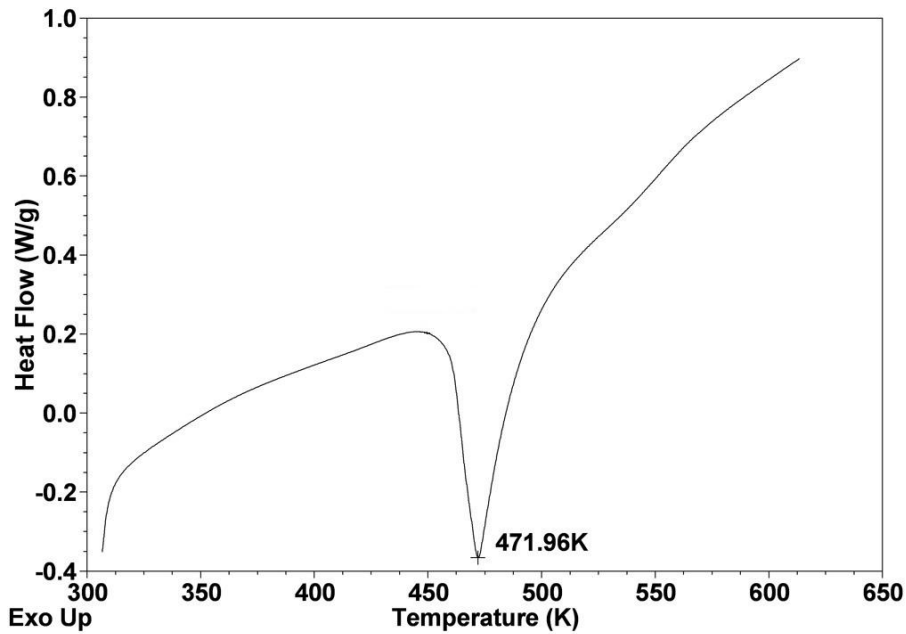


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Alloy Sn80In18Cu2



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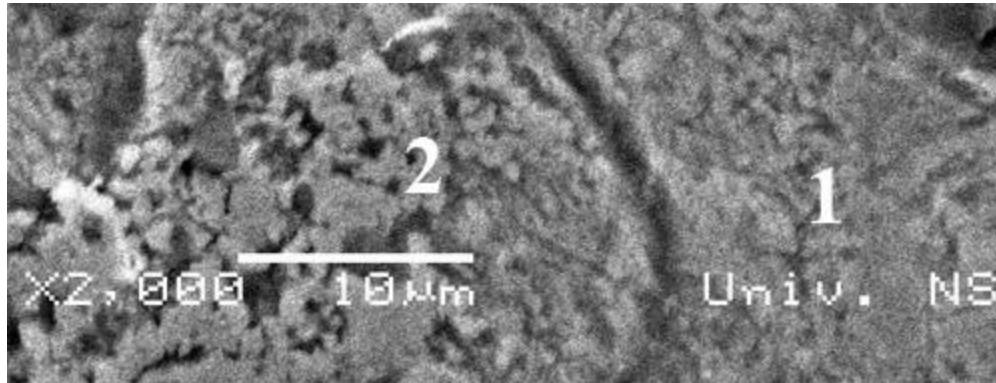


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Distribution of phases
(in wt%)

in alloy Sn80In18Cu2 :

1 - 18.49 %In;81.51 %Sn

2 - 19.86 %In;80.14 %Sn



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SUMMARY

- Promoting of ecological solders is the purpose of ECOSOLDER project. Bearing in mind that the alloys based on tin, silver and copper are already in use and have a higher melting temperature compared to conventional solders, we considered a possibility of using indium in combination with these elements.



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SUMMARY

The results of thermal analysis pointed out that the amount of indium has a great influence on thermal characteristics on Sn-In based alloys. This influence is not only reflected at melting point of an alloy or characteristic temperatures, yet the melting area and the occurrence of partial melting of the alloy.



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SUMMARY

So, the best solution is using the best properties of investigated alloys to make a new multi component alloy based on tin and indium, with addition of silver and copper. Of course, you should always keep in mind the economic factor, which is not crucial, but it is unavoidable to every story.



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Thank you for your attention!



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