

## Supporting Information

# Advances in the Multi-elemental Analysis of Solder by ETV-ICPOES for the Discrimination of Forensic Evidence

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**Table S1.** Results of one-way analysis of variance (ANOVA) comparing element concentrations ( $n = 5$ ) between an unmelted solder portion and melted solder portions of different sizes (0.5 cm, 1.0 cm, 2.5 cm, 3.0 cm). Elements in agreement show no significant difference among groups

Solder	Elements in agreement between all groups ( $p < 0.05$ )	Elements not in agreement between all groups ( $p \geq 0.05$ )
Dura-Pure 17657	Ag, As, Bi, Cr, Fe, Sb, Sn	-
Oatey 48317	Ag, As, Bi, Cr, Fe, Sb, Sn	-
Electrisol 17664	Ag, As, Bi, Cr, Fe, Sb, Sn	-

**Table S2.** Results of unpaired Student's t-test comparing element concentrations ( $n = 5$ ) in unmelted Dura-pure solder versus melted solder of each size test condition. Elements in agreement show no significant difference among groups

Group comparison	Elements in agreement ( $p < 0.05$ )	Elements not in agreement ( $p \geq 0.05$ )
Unmelted vs. melted 0.5 cm Dura-pure	Ag, As, Bi, Cr, Fe, Sb, Sn	-
Unmelted vs. melted 1.0 cm Dura-pure	Ag, As, Bi, Cr, Fe, Sb, Sn	-
Unmelted vs. melted 2.5 cm Dura-pure	Ag, As, Bi, Cr, Fe, Sb, Sn	-
Unmelted vs. melted 3.0 cm Dura-pure	Ag, As, Bi, Cr, Fe, Sb, Sn	-

**Table S3.** Results of ANOVA comparing element concentrations ( $n = 5$ ) between unmelted solder portion and solders melted at different temperatures (200°C, 300°C, and 400°C). Elements in agreement show no significant difference among groups

Solder	Elements in agreement between all test groups ( $p < 0.05$ )	Elements not in agreement between all groups ( $p \geq 0.05$ )
Dura-Pure 17657	Ag, As, Bi, Cr, Fe, Sb, Sn	-
Oatey 48317	Ag, As, Bi, Cr, Fe, Sb, Sn	-
Electrisol 17664	Ag, As, Bi, Cr, Fe, Sb, Sn	-

**Table S4.** Results of Student's t-test comparing element concentrations (n = 5) in unmelted Dura-pure solder versus melted Dura-pure solder at various temperature conditions. Elements in agreement show no significant difference at the 95% confidence interval

<b>Group comparison</b>	<b>Elements in agreement (p &lt; 0.05)</b>	<b>Elements not in agreement (p ≥ 0.05)</b>
<b>Unmelted vs. 200°C melted</b>	Ag, As, Bi, Cr, Fe, Sb, Sn	-
<b>Unmelted vs. 300°C melted</b>	Ag, As, Bi, Cr, Fe, Sb, Sn	-
<b>Unmelted vs. 400°C melted</b>	Ag, As, Bi, Cr, Fe, Sb, Sn	-

**Table S5.** Results of Student's t-test comparing element concentrations (n = 5) in solder samples before and after melting with an uncleaned soldering tip. Solders were melted consecutively in the order listed below

<b>Sample</b>	<b>Melting order</b>	<b>Elements in agreement (p &lt; 0.05)</b>	<b>Elements not in agreement (p ≥ 0.05)</b>
<b>Dura-Pure 17657</b>	1	As, Ag, Bi, Cr, Fe, Sb, Sn	-
<b>Oatey 48317</b>	2	As, Ag, Bi, Cr, Fe, Sb, Sn	-
<b>Electrisol 17664</b>	3	As, Ag, Bi, Cr, Fe, Sb, Sn	-