



Cold Spray Processing of n-Al Alloys for Repair/Reconditioning



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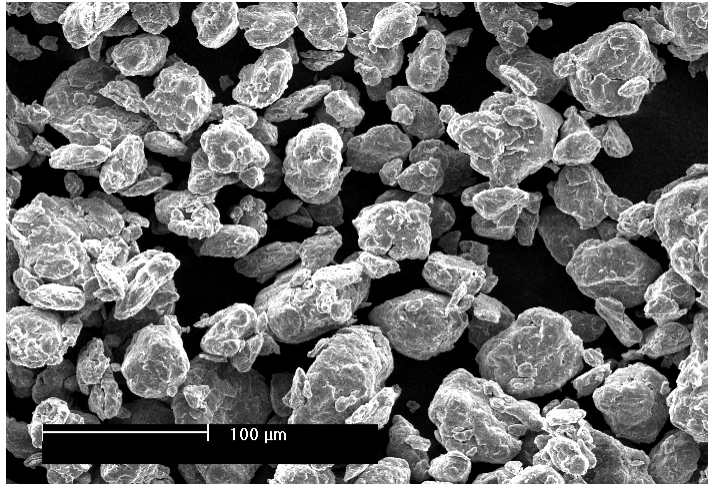
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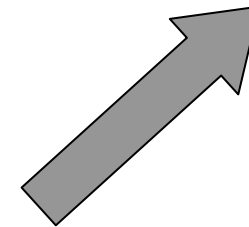
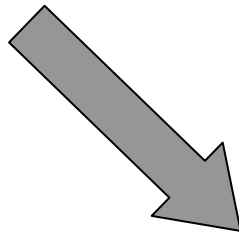
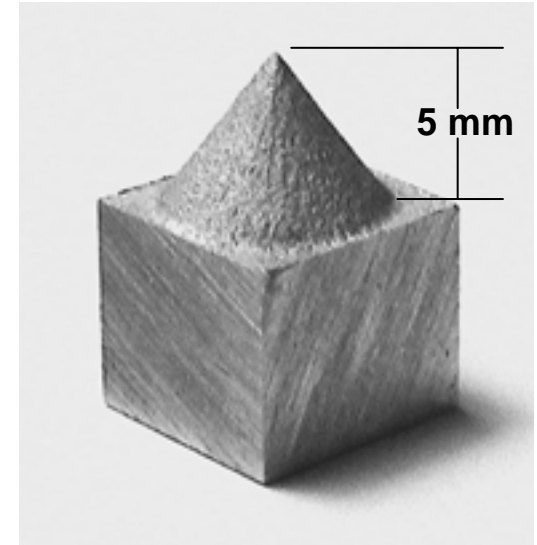
“To deposit a nanostructured aluminum alloy coating or near-net shape form using CSP”

CRITERIA:

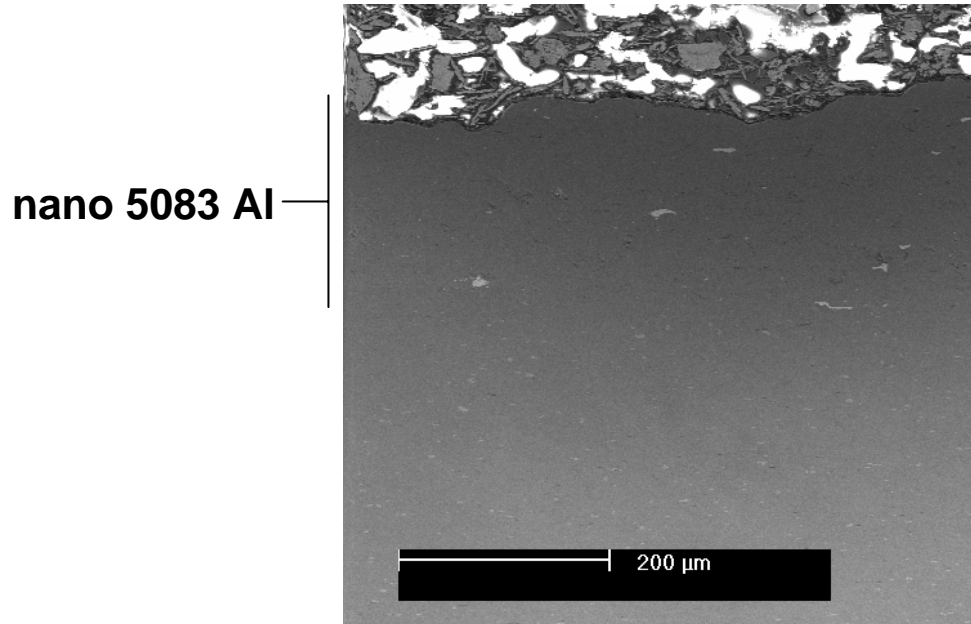
- 1. small grain size**
- 2. limit oxidation**
- 3. good adherence**



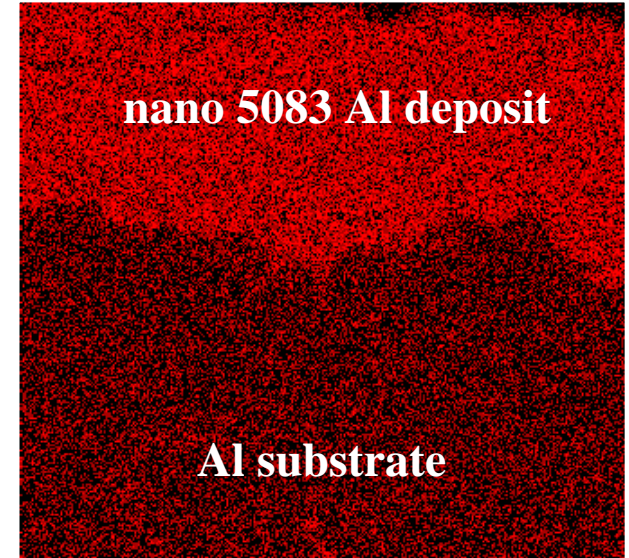
Cryomilled 5083 Al powder



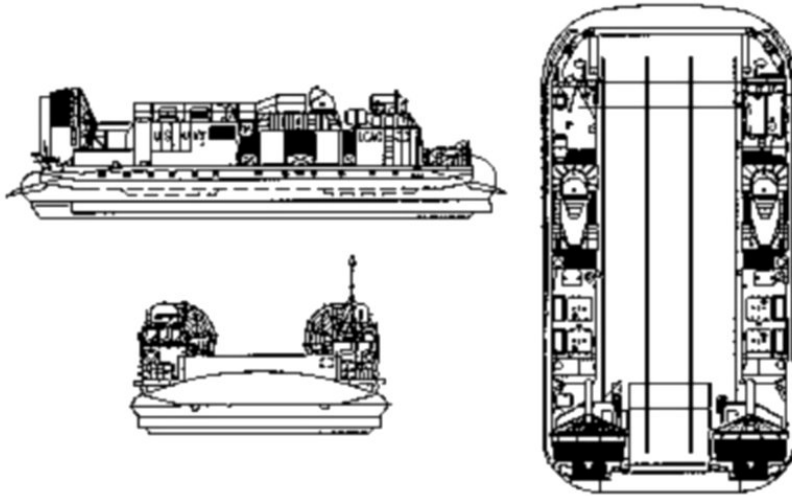
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Mg elemental mapping



Sample	Microhardness (HV_{0.3})
cast 5083 Al	87 - 104
CSP 5083 Al	127
CSP n-5083 Al	261





status of CSP n-Al alloys

SUMMARY:

- cold spray process was successfully used to deposit quality nanostructured 5083 Al alloy
- dense deposits showed no signs of grain growth or oxidation
- nanostructured deposit possessed twice the hardness of the microstructured deposit
- CSP of n-Al alloys has potential for the repair of localized damage on aluminum structures and/or for the fabrication of high strength-to-weight ratio components