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**Date Coverage**
1966 - 2020

**Update Frequency**
Closed

**Geographic Coverage**
International

**Document Types**
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**Publisher**

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**TI**

# Hot cracking in pulsed laser processing of a nickel based superalloy up by electrospark deposition

**AU,AUFN,AULN**

EBRAHIMNIA, M; MALEK, GHAINI F; Shahverdi, H R. **Science and Technology of Welding and Joining** 19.1: .25-29. (Jan 2014)

Highlighting: Off | Single | Multi

**AB**

⊟ **Abstract (summary)**  Translate

The susceptibility to hot cracking of precipitation hardened Inconel 738 LC (IN738LC) (Ni, 0.10%C, 15.50%Cr, 9.8%Co, 3.04%W, 2.27%Mo, 0.70%Nb, 0.09%Fe, 4.36%Al, 3.15%Ti, 1.81%Ta, 0.04%Zr, 0.01%B) fabricated via electrospark deposition (ESD) on substrate of the same material and subjected to pulse laser welding was investigated. A rectangle (10 x 10 x 0.5 mm) was machined out of IN738LC plates (100 x 50 x 5 mm) and filled by means of ESD (deposition time ca. 150 min; shielding gas coaxis argon; shielding gas flow rate 15 l/min; electrode rotation speed 2500 rev/min; voltage 100 V; pulse frequency 250 Hz; duty cycle 3.5%; current 3.5 A) using IN738LC electrodes. Several ESD build-up samples underwent pulsed laser remelt processing using a pulsed Nd:YAG laser (max. beam power 400 W; shielding gas flow rate 0.16 l/s; focal length 75 mm; spot diameter 1 mm; pulse frequency 20 Hz; pulse duration 7 ms; energy per pulse 7 J; overlap factor 0% to ca. 40%). Specimens were obtained from the welded samples, and the microstructures of the ESD, laser remelted and parent metals were characterised, focusing on liquation and solidification cracking behaviour. The results are discussed with regard to the microstructural features produced by ESD that influence liquation and solidification cracking.

⊟ **Indexing (details)**  📋 Cite

**SU**

| Subject | WELDABILITY AND METALLURGY;<br>Technical;<br>REFERENCE LISTS;<br>NICKEL ALLOYS;<br>RADIATION WELDING;<br>PHOTON BEAM WELDING;<br>LASER WELDING;<br>PULSED LASER WELDING;<br>DEPOSITION;<br>DEPOSITED METAL;<br>DEFECTS;<br>CRACKING;<br>HOT CRACKING; |
|---|---|
| | HEAT AFFECTED ZONE;<br>MICROSTRUCTURE;<br>MELTING;<br>WELDABILITY;<br>MATERIALS WELDABILITY;<br>METALLURGICAL WELDABILITY |

**ID**
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| Identifier (keyword) | ELECTROSPARK DEPOSITION |
|---|---|
| Title | Hot cracking in pulsed laser processing of a nickel based superalloy up by electrospark deposition |

**AU,AUFN,AULN**
**AF**
**LA**
**SL**
**DTX**
**DTYPE**
**DF**

| Author | EBRAHIMNIA, M; MALEK, GHAINI F; Shahverdi, H R |
|---|---|
| Author affiliation | TARBIAT MODARES UNIVERSITY |
| Language | English |
| Language of abstract | ENG |
| Document treatment | Experimental |
| Document type | Article |
| Document feature | 42 references, 4 figures |

| | | | |
|---|---|---|---|
| PUB | Publication title | Science and Technology of Welding and Joining | |
| SRC | Source details | Science and Technology of Welding and Joining, vol.19, no.1. Jan.2014. pp.25-29. 4 fig., 42 ref. | |
| VO | Volume | 19 | |
| ISS | Issue | 1 | |
| PG | Pagination | pp.25-29 | |
| ISSN | ISSN | 1362-1718, 1743-2936 | |
| PSTYPE | Publication type | Scholarly Journals | |
| NT | Notes | Photocopy available from TWI | |
| DOI | DOI | http://dx.doi.org/10.1179/1362171813Y.0000000157 | |
| | URL | http://www.maneyonline.com/doi/pdfplus/10.1179/1362171813Y.0000000157 | |
| PD,YR | Publication date | Jan 2014 | |
| | Source attribution | Weldasearch, © Publisher specific | |
| AN | Accession number | 259767 | |
| | Document URL | http://search.proquest.com/professional/docview/1528863604?accountid=166878 | |
| FAV | First available | 2014-05-28 | |
| UD | Updates | 2014-05-28 | |
| | Database | Weldasearch® (1966 - current) | |

## Search Fields

| Field Name | Field Code | Example | Description and Notes |
|---|---|---|---|
| Abstract | AB | ab("laser remelt processing") | Use adjacency and/or Boolean operators to narrow search results. |
| Abstract present | ABANY | "IN738LC electrodes" AND abany(yes) | Add: *AND ABANY(YES)* to a query to limit retrieval to records with abstracts. |
| Accession number | AN | an(259767) | A unique document identification number assigned by the information provider. |
| All fields | ALL | all("resistance spot welding") | Searches all fields in bibliographic files. |
| All fields + text | -- | "resistance spot welding" | Same as ALL field code: searches all fields. |
| Author[1] <br> Author First Name <br> Author Last Name | AU <br> AUFN <br> AULN | au(malek, ghaini f) <br> aufn(ghaini) <br> auln(malek) | Includes all authors. Also searchable via the Look Up Citation tool. |
| First author | FAU | fau(ebrahimnia, m) | Use FAU to find only the first author of a document. Additional authors will not be searched. Displayed within Author. |
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| Company/ organization[1] | CO | co(hypertherm) | |
| Conference information | CF | cf(International Symposium N/3 belgium) | Displays as part of Conference title field. May contain Conference name, location, year, etc. |
| Conference event start date | ESDT | esdt(1986-11-12) | Event Start date also searchable with CDT. All conference information searchable with CF. |
| Conference event end date | EVDT | evdt(1986-11-13) | Also searchable with CF. |

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[1] A Lookup/Browse feature is available for this field in the Advanced Search dropdown or in Browse Fields.

| Field Name | Field Code | Example | Description and Notes |
|---|---|---|---|
| Conference title | CFTI | cfti(International Thermal Spray Conference) | |
| DOI | DOI | doi(10.1179/1362171813Y.0000000157) | Digital Object Identifier. Search the portion of the DOI that comes after http://dx.doi.org/. |
| Document feature | DF | df(42 references) | Numbers of tables, references, figures, etc. |
| Document title | TI | ti("Hot cracking in pulsed laser processing of a nickel based superalloy") | Includes alternate title (OTI) and subtitle, but not Publication Title (PUB). |
| Document treatment | DTX | dtx(experimental) | |
| Document type | DTYPE | dtype(article) | |
| First available | FAV | fav(2014-05-28) | Indicates the first time a document was loaded in a specific database on Dialog. It will not change however many times the record is subsequently reloaded, as long as the accession number does not change. |
| From database[2] | FDB | composites AND fdb(weldasearch)<br><br>composites AND fbd(1008483) | Useful in multi-file searches to isolate records from a single file.<br><br>FDB cannot be searched on its own; specify at least one search term then AND it with FDB. |
| Identifiers | IF | if("electrospark deposition") | Uncontrolled vocabulary terms. |
| ISBN | ISBN | isbn(0-912035-82-X) | |
| ISSN | ISSN | issn(1362-1718)<br>issn(13621718) | |
| Issue | ISS | iss(1) | Also searchable via the Look Up Citation tool. |
| Journal name | JN | jn("science and technology" PRE/4 welding) | Journal names only. For complete Publication name types, use PUB. Also searchable via the Look Up Citation tool for Publication name. |
| Language | LA | la(english) | |
| Language of abstract | SL | sl(English) | |
| Notes | NT | nt(photocopy available from TWI)<br><br>nt("See also Weldasearch 171534") | |
| Pagination | PG | pg(25-29) | |
| Patent application date | APD | apd(1997-04-15) | |
| Patent application number | APN | apn(9371096) | |
| Patent assignee | PA | pa(matsushita) | |
| Patent information | PAT | pat(fronius and 20030132211) | |

| Field Name | Field Code | Example | Description and Notes |
|---|---|---|---|
| Patent number | PN | pn(1190808) | |
| Patent publication date | PDA | pda(20020327) | |
| Patent publication country | PBC | pbc(ep) | |
| Publication date | PD | pd(201401)<br>pd(201401-201403) | Also searchable via the Look Up Citation tool. |
| Publication title[1] | PUB | pub("science and technology of welding and joining") | Title of publication where document originally appeared. Also searchable via the Look Up Citation tool. |
| Publication type | PSTYPE | pstype(books) | |
| Publication year | YR | yr(2011) | Single year or a range of years may be searched. |
| Source information | SRC | src("brazing and soldering today") | Includes Publication title, Volume, Issue, ISSN, Publication date, and Pagination. Also searchable via the Look Up Citation tool. |
| Start page | PAGE | page(25) | First page number – displayed within Pagination. Searchable on the Look Up Citation tool. |
| Subject[1] | SU | su("liquation cracking") | |
| URL | URL | url(http://www.ingentaconnect.com/content/maney/stwj) | |
| Updates | UD | ud(2014-05-28) | The date(s) the record was loaded as a result of an update provided by the supplier. |
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