

中国精品科技期刊  
RCCSE中国权威学术期刊

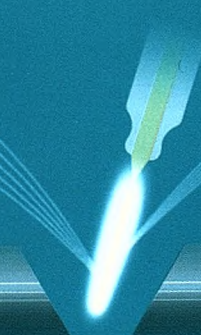
ISSN0253-360X  
CODEN HHPAD2

# 焊接学报

TRANSACTIONS OF THE CHINA WELDING INSTITUTION



中国机械工程学会主办



第36卷第 1 期

Vol. 36 No. 1

2015

# 焊接学报

第 36 卷 第 1 期

2015 年 1 月 25 日出版

## 目 次

铝/钢无匙孔搅拌摩擦点焊焊接性分析 .....	王希靖,张亚州,张忠科,等	(1)
蚁群算法在白车身底板焊接路径规划中的应用 .....	林巨广,陈魁欣,戴淮初,等	(5)
CO <sub>2</sub> 气体保护焊逆变电源闭环控制系统 .....	刘珊中,汪运浩,赵予龙,等	(10)
铝/钢异种金属电弧辅助激光对接熔钎焊方法 .....	樊 丁,王 斌,李春玲,等	(15)
316L 不锈钢表面激光熔覆钴基合金组织及锌蚀机理 .....	张春华,刘 杰,吴臣亮,等	(19)
基于 NURBS 的航空发动机叶片焊接修复的轨迹规划 .....	戴士杰,张 熠,王志平,等	(23)
脉冲放电对焊接接头的强化分析 .....	郑丽娟,向 龙,付宇明	(27)
全位置焊高频励磁装置工作特性分析 .....	岳建锋,李亮玉,刘文吉,等	(31)
水下 50 m 激光切割 30 mm 厚钢板特性 .....	王 威,檀财旺,徐 良,等	(35)
工业纯钛 TA2/紫铜 T2 异种金属 CMT 焊接接头的微观组织和腐蚀性能 .....	曹 睿,冯 振,陈剑虹,等	(39)
镁/钢填镍夹层激光-电弧复合对接熔化焊特性 .....	宋 刚,胡广龙,任大鑫,等	(43)
铝/钛异种金属旁路分流 MIG 电弧熔钎焊特性 .....	苗玉刚,王 腾,周 玥,等	(47)
搅拌头旋转频率对静止轴肩搅拌摩擦焊接头力学性能的影响规律 .....	姬书得,孟祥晨,黄永宪,等	(51)
应变速率对 X80 管线钢在库尔勒土壤环境中应力腐蚀开裂的影响 .....	谢 飞,王 丹,吴 明,等	(55)
Sn-0.3Ag-0.7Cu-xSb 无铅钎料润湿性 .....	张 亮,Tu K N,孙 磊,等	(59)
铝/钢异种金属火焰钎焊接头组织和性能 .....	杨金龙,薛松柏,薛 鹏,等	(63)
激光熔覆原位合成陶瓷相增强铁基熔覆层的组织和性能 .....	乔 虹,李庆棠,符寒光,等	(67)
基于结构应力方法的正面角焊缝抗剪强度分析 .....	聂春戈,魏鸿亮,董平沙,等	(70)
金属互连结构的电迁移仿真分析 .....	邓 登,崔海坡	(75)
ADB610 钢焊接接头概率疲劳裂纹扩展分析 .....	张天会,果 霖,施 杰,等	(79)
Sn-0.3Ag-0.7Cu-xNd 钎料显微组织及性能 .....	徐佳琛,薛松柏,薛 鹏,等	(83)
薄壁多焊缝复杂构件焊接过程的数值模拟 .....	李江飞,齐海波,任德亮,等	(87)
双机器人协同焊接的轨迹优化 .....	翟敬梅,应 灿,张 铁,等	(91)
Q690C 低碳粒贝钢多层 MAG 焊接头组织与性能 .....	郭咏华,张贵锋,杨宗奇,等	(96)
超声波辅助钎焊铜/铝异种金属接头界面组织性能及强化机制 .....	张汇文,崔 炜,闫久春	(101)
机械振动频率对高强度钢焊接接头低温韧性的影响 .....	苏允海,马大海,孟凡玲,等	(105)
Ni/Al 纳米金属箔自蔓延焊接钛/铜异种材料 .....	何金江,徐学礼,王 越,等	(109)
英文摘要 .....		( I )

[期刊基本参数] CN23-1178/TG\*1980\*m\*A4\*112\*zh\*P\*¥15.00\*5800\*27\*2015-01

责任编辑: 郑 红

# TRANSACTIONS OF THE CHINA WELDING INSTITUTION

Vol. 36 No. 1 January 2015

## CONTENTS

Welding analyses of friction stir spot welding without keyhole between aluminum alloy and zinc-coated steel .....	WANG Xijiang, ZHANG Yazhou, ZHANG Zhongke, et al (1)
Application of ant colony algorithm to process planning of welding path in BIW .....	LIN Juguang, CHEN Suxin, DAI Huaichu, et al (5)
Research on closed-loop control system of CO <sub>2</sub> shielded arc welding inverter power source .....	LIU Shanzhong, WANG Yunhao, ZHAO Yulong, et al (10)
Method of fusion-brazed butt joint between aluminum alloy and galvanized steel by arc-assisted laser .....	FAN Ding, WANG Bin, LI Chunlin, et al (15)
Microstructure and zinc corrosion mechanism of laser cladding Co-based alloy on 316L stainless steel .....	ZHANG Chunhua, LIU Jie, WU Chenliang, et al (19)
Trajectory planning of welded repair for aero-engine blades based on NURBS curve .....	DAI Shijie, ZHANG Yi, WANG Zhiping, et al (23)
Analysis of impacting on pulse current discharge for welded joint's strength .....	ZHENG Lijuan, XIANG Long, FU Yuming (27)
Analysis of working character of all position welding based on exterior high frequency excitation device .....	YUE Jianfeng, LI Liangyu, LIU Wenji, et al (31)
Laser cutting 30 mm steel plates under water of 50 m .....	WANG Wei, TAN Caiwang, XU Liang, et al (35)
Microstructure, bonding mechanism and corrosion property of titanium TA2/copper T2 welded joint by cold metal transfer technology .....	CAO Rui, FENG Zhen, CHEN Jianhong, et al (39)
Study on butt fusion welding characteristics of AZ31B magnesium alloy to steel by hybrid laser-TIG welding with Ni interlayer .....	SONG Gang, HU Guanglong, REN Daxin, et al (43)
Characteristics and mechanical properties of bypass-current MIG welding-brazed dissimilar Al/Ti joints .....	MIAO Yugang, WANG Teng, ZHOU Yue, et al (47)
Effect of rotational velocity of tool on mechanical properties of stationary shoulder friction stir welding .....	JI Shude, MENG Xiangchen, HUANG Yongxian, et al (51)
Effects of strain rate on stress corrosion cracking of X80 pipeline steel in ku'erle soil environment .....	XIE Fei, WANG Dan, WU Ming, et al (55)
Wettability of Sn-0.3Ag-0.7Cu-xSb lead-free solders .....	ZHANG Liang, TU K N, SUN Lei, et al (59)
Microstructure and mechanical properties of aluminum/stainless steel brazed joint with torch brazing .....	YANG Jinlong, XUE Songbai, XUE Peng, et al (63)
Microstructure and properties of in-situ synthesized ceramic phase reinforced Fe-based coating by laser cladding .....	QIAO Hong, LI Qingtang, FU Hanguang, et al (67)
Shear strength analysis of transverse fillet welds based on structural stress method .....	NIE Chunge, WEI Hongliang, DONG Pingsha, et al (70)
Electromigration simulation analysis of metal interconnects .....	DENG Deng, CUI Haipo (75)
Fatigue crack propagation with probability for ADB610 steel welded joints .....	ZHANG Tianhui, GUO Lin, SHI Jie, et al (79)
Effect of Nd on properties and microstructure of Sn-0.3Ag-0.7Cu-xNd lead-free solder .....	XU Jiachen, XUE Songbai, XUE Peng, et al (83)
Numerical simulation of welding process on thin-walled multi-welds complex component .....	LI Jiangfei, QI Haibo, REN Deliang, et al (87)
Optimization on two cooperative robot arms' trajectory for welding .....	ZHAI Jingmei, YING Can, ZHANG Tie, et al (91)
Microstructure and mechanical property of Q690C HSLA steel joint welded by multipass metal active gas (MAG) welding process .....	Guo Yonghua, ZHANG Guifeng, YANG Zongqi, et al (96)
Interface microstructure and strengthening mechanism of Cu/Al dissimilar metal joint by ultrasonic-assisted soldering .....	ZHANG Huiwen, CUI Wei, YAN Jiuchun (101)
Research on microstructure and performance of welded joints of HSLA steel under vibration conditioning .....	SU Yunhai, MA Dahai, MENG Fanling, et al (105)
Soldering titanium/copper with Ni/Al self-propagating multilayer foil .....	HE Jinjiang, XU Xueli, WANG Yue, et al (109)

# 第八届焊接学报编辑委员会

**主任:** 林尚扬

**副主任:** 何 实 吴毅雄 潘际奎 徐滨士 关 桥

**国内委员** (按姓氏笔划为序):

王 亚 王克鸿 王加友 王麟书 冯吉才 田志凌 刘金合 刚 铁 孙大千  
孙凤莲 吴 林 李午申 李晓红 李晓延 李慕勤 张 平 张建勋 陈剑虹  
陈 强 陈芙蓉 陈怀宁 陈 健 陈彦宾 陈善本 宋天虎 宋永伦 赵熹华  
赵东升 武传松 单 平 荆洪阳 胡绳荪 都 东 殷树言 栗卓新 康 龙  
蒋力培 焦向东 解应龙 樊 丁 薛松柏 薛家祥

**国外委员:**

中田一博 (日本)

Dietrich Rehfeldt (德国)

## 焊接学报

HANJIE XUEBAO

(月刊, 1980年创刊)

第36卷 第1期 2015年1月25日出版

**主 管:** 中国科学技术协会  
**主 办:** 中国机械工程学会  
中国机械工程学会焊接学会  
机械科学研究院哈尔滨焊接  
研究所

**编辑出版:** 焊接杂志社焊接学报编辑部

**社 长:** 赵东升

**主 编:** 王 亚

**编辑部地址:** 哈尔滨市松北区创新路2077号

**邮政编码:** 150028

**电 话:** 0451-86323218

**传 真:** 0451-86323218

**Http://magazines.hwi.com.cn**

**E-mail: hjxbbjb@126.com**

**印 刷:** 哈尔滨市工大节能印刷厂

**国内总发行:** 哈尔滨市报刊发行局

**国外总发行:** 中国国际图书贸易总公司

**订 购 处:** 全国各地邮局

**邮发代号:** 14-17

**国外代号:** M322

**连续出版物号:** ISSN 0253-360X  
CN23-1178/TG

**广告许可证号:** 2301004010030

**定 价:** 15.00元

## TRANSACTIONS OF THE CHINA WELDING INSTITUTION

(Monthly, started in 1980)

Vol.36 No.1 25 January 2015

**Responsible Department:**

China Association for Science and Technology

**Sponsored by:**

Chinese Mechanical Engineering Society

Chinese Welding Society of CMES

Harbin Welding Institute

**Edited & Published by:**

Editorial Board of Transactions of the China Weld-  
ing Institution, Magazine Agency of Welding

**President:** ZHAO Dongsheng

**Editor-in-Chief:** WANG Ya

**Address:** 2077 Chuangxin Road, Harbin 150028, China

**Tel:** 0451-86323218

**Fax:** 0451-86323218

**Http://magazines.hwi.com.cn**

**E-mail: hjxbbjb@126.com**

**Distributed Abroad by:**

China International Book Trading Corporation

(P.O.Box 399, Beijing, China)

**Code:** M322

ISSN 0253-360X



9 770253 360152