Title Tiltle Title

**Name1**  **,Name2**

affiliation affiliation affiliation.

|  |
| --- |
| Abstract ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………...  **Keywords**: ………..,…………..,…………….,…….. |

Corresponding Author………..

|  |  |
| --- | --- |
| **عنوان مقاله**  **نویسنده1**\*، **نویسنده2**  نشانی سازمانی |  |

|  |
| --- |
| **چكيده**  .............................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................  **کلمات كليدي:** .........،.............،...........،.................. |

\* نویسنده مسئول، پست الکترونیکی: .......................

**1- مقدمه**

.................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... .................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... ................................................................................................................................................................................................................................................................................................................................................................................................................................................................................

**منابع**

1-Wan, Z., et al.,"Characterization of intermetallic compound at the interfaces of Al-steel resistance spot welds", Journal of Materials Processing Technology, 2017, 242: p. 12–23.

2-Sun, D., et al., "Microstructures and mechanical properties of resistance spot welded joints of 16Mn steel and 6063-T6 aluminum alloy with different electrodes." Journal of materials and design,. In Pres, 2016..

3-Chen, J., et al, "Microstructure and mechanical properties of resistance-spot-welded joints for A5052 aluminum alloy and DP 600 steel". Materials Characterization,. 2016, 120: p. 45–52.

4- Jianbin Chen, Xinjian Yuan, Zhan Hu, Kanglong Wu, Ting Li, Ci Li, Improvement of resistance-spot-welded joints for DP 600 steel and A5052 aluminum alloy with Zn slice interlayer, Journal of Manufacturing Processes 30, 2017, 396–405.

5- Nannan Chena, Hui-Ping Wangb, Blair E. Carlsonb, David R. Sigler b, Min Wanga, Fracture mechanisms of Al/steel resistance spot welds in lap shear test, Journal of Materials Processing Technology 243, 2017, 347–354.

6- M.R. Arghavani, M. Movahedi , A.H. Kokabi, Role of zinc layer in resistance spot welding of aluminium to steel, Materials and Design 102, 2016, 106–114

7-Sun B. X., Stephens E. V., Khaleel M. A., Shao H.,

Kimchi M., Resistance Spot Welding of Aluminum Alloy to Steel with Transition Material From Process to Performance, Part I: Experimental Study, Welding Journal, 2004, 1, 3, 188-195.

8- Lihu Cui , Ranfeng Qiub, LongLong Hou, Zhongbao Shen, Qingzhe Li, Resistance Spot Welding between Steel and Aluminum Alloy, 5th International Conference on Advanced Design and Manufacturing Engineering, 2015, 777-781.

9- Pouranvari Majid, Critical Assessment 27: Dissimilar Resistance Spot Welding of Aluminium/Steel: Challenges and Opportunities, Materials Science and Technology, 2017, 33, 15, 1705-1712.

10- Ibrahim I, Ito R, Kakiuchi T, et al. Fatigue behavior of Al/steel dissimilar resistance spot welds fabricated using Al-Mg interlayer. Sci Technol Weld Join. 2016;21:223–233.

11-Zhang W, Sun D, Han L, et al. Interfacial microstructure and mechanical property of resistance spot welded joint of high strength steel and aluminium alloy with 4047 AlSi12 interlayer. Mater Des. 2014;57:186–194.

12- Alizadeh-Sh M, Pouranvari M, Marashi SPH. Welding metallurgy of stainless steels during resistance spot welding part II – heat affected zone and mechanical performance. Sci Technol Weld Join. 2015;20: 512–521.

13- C. Choi, D. Kim, D. Nam, Y. Kim, Y. Park, A hybrid joining technology for aluminum/zinc coated steels in vehicles, J. Mater. Sci. Technol. 26, 2010, 858–864.

14-R. Qiu, H. Shi, K. Zhang, Y. Tu, C. Iwamoto, S. Satonaka, Interfacial characterization of joint between mild steel and aluminum alloy welded by resistance spot welding, Mater. Charact. 61, 2010, 684–688.

15- W. Zhang, X. Qiu, D. Sun, L. Han, Effects of resistance spot welding parameters on microstructures and mechanical properties of dissimilar material joints of galvanised high strength steel and aluminium alloy, Sci. Technol. Weld. Join. 16, 2011, 153–161.

16- Y. Liu, X. Bian, K. Zhang, C. Yang, L. Feng, H.S. Kim, et al., Interfacial microstructures and properties of aluminum alloys/galvanized low-carbon steel under highpressure torsion, Mater. Des. 64, 2014, 287–293.

17- L. Shao, Y. Shi, J. Huang, S.Wu, Effect of joining parameters on microstructure of dissimilar metal joints between aluminum and galvanized steel, Mater. Des. 66, 2015, 453–458.

**حداقل دو رفرنس ازنشریه علوم و فناوری جوشکاری ایران**