

## References

- Ahmadi, E., & Ebrahimi, A. R. (2015). Welding of 316L austenitic stainless steel with activated tungsten inert gas process. *Journals of materials engineering and performance*, 24(2), 1065–1071. doi:10.1007/s11665-014-1336-6
- Ahmadi, E., Ebrahimi, A. R., & Khosroshahi, R. A. (2013). Welding of 304L stainless steel with activated tungsten inert gas process (A-TIG). *international journal of iron and steel society of iran*, 10(1), 27–33. doi:10.1016/j.promfg.2018.02.041
- Anbarasu, P., Yokeswaran, R., Godwin Antony, A., & Sivachandran, S. (2020). Investigation of filler material influence on hardness of TIG welded joints. *Materials Today: Proceedings*, 21, 964–967. doi:10.1016/j.matpr.2019.09.061
- Aniekan, E. I., Ikechukwu, O., & Ikpe, E. E. (2017). Effects of arc voltage and welding current on the arc length of tungsten inert gas welding (TIG). *International journal of Engineering Technologies*, 3(4), 213–221.
- Azevedo, A. G., Ferraresi, V. A., & Farias, J. P. (2010). Ferritic stainless steel welding with the A-TIG process. *Welding International*, 24(8), 571–578. doi:10.1080/09507110903568794
- Babbar, A., Kumar, A., Jain, V., & Gupta, D. (2019). Enhancement of activated tungsten inert gas (A-TIG) welding using multi-component TiO<sub>2</sub>-SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> hybrid flux. *Measurement*, 148, 106912. doi:10.1016/j.measurement.2019.106912
- Badheka V. J., B. R. (2016). Microstructural Aspects of TIG and A-TIG Welding Process of Dissimilar Steel Grades and Correlation to Mechanical Behavior. *Transactions of the Indian Institute of Metals*, 69(9), 1765. doi:10.1007/s12666-016-0836-5
- Baelack, W. A., Duquette, D. J., & Savage, W. F. (1979). The effect of ferrite content on stress corrosion cracking in duplex stainless steel weld metals at room temperature. *CORROSION*, 35(2), 45–54. doi:10.5006/0010-9312-35.2.45
- Berthier, A., Paillard, P., & Christien, F. (2009). Structural and chemical evolution of super duplex stainless steel on activated tungsten. *Science and Technology of Welding and Joining*, 14(8), 681–690. doi:10.1179/136217109X449184
- Berthier, A., Paillard, P., Carin, M., Valensi, F., & Pellerin, S. (2012). TIG and A-TIG welding experimental investigations and comparison to simulation. *Science and Technology of Welding and Joining*, 17(8), 609–615. doi:10.1179/1362171812Y.0000000024
- Bhadeshia, H., & Honeycombe, R. (2017). *Chapter 12-Stainless Steel BT- Steels, Microstructure and Properties (Fourth edition)*. Butterworth-Heinemann. doi:10.1016/B978-0-08-100270-4.00012-3
- Bhattacharya, A. (2016). Revisiting Arc, metal flow behavior in flux activated tungsten inert gas welding. *Materials and Manufacturing Processes*, 31(3), 343–351. doi:10.1080/10426914.2015.1070421
- Bodkhe, S. C., & Dolas, D. R. (2018). Optimization of activated tungsten inert gas welding of 304L austenitic stainless steel. *Procedia Manufacturing*, 20, 277–282. doi:10.1016/j.promfg.2018.02.041
- Bordogna, G., Muggiasca, S., Giappino, S., Belloli, M., Keuning, J. A., & Huijsmans, R. H. (2020). The effects of the aerodynamic interaction on the performance of two flettner rotors. *Journal of Wind Engineering & Industrial Aerodynamics*, 104024. doi:https://doi.org/10.1016/j.jweia.2019.104024
- Bort, L. S., & Franck, C. M. (2016). Effects of nozzle and contact geometry on arc voltage in gas circuit-breakers. *IEEE International Conference on High Voltage Engineering and Application (ICHVE)* (pp. 1–4). Chengdu: IEEE. doi:10.1109/ICHVE.2016.7800700
- Box G, B. D. (1960). Some new three level designs for the study of quantitative variables. *Technometrics*, 2(4), 455–475. doi:10.2307/1266454

- Burgardt, P., & Heiple, C. (1985). Effects of SO<sub>2</sub> shielding gas additions on GTA weld shape. *Weld Journal*, 64(6), 159-162.
- Cai, Y., Luo, Z., Huang, Z., & Zeng, Y. (2016). Effect of Cerium Oxide Flux on Active Flux TIG Welding of 800 MPa Super Steel. *Journal of Materials Processing Technology*, 230, 80–87. doi:10.1016/j.jmatprotec.2015.11.008
- Chakravarthy, P., Agilan, M., & Neethu, N. (2019). *Flux Bounded Tungsten Inert Gas Welding Process-An Introduction*. CRC Press.
- Chandrasekar, G., Kailasanathan, C., Verma, D. K., & Nandagopal, K. (2017). Optimization of welding parameters, influence of activating flux and investigation on the mechanical and metallurgical properties of activated TIG weldments of AISI 316 L stainless steel. *Transactions of the Indian Institute of Metals*, 70(3), 671–684. doi:10.1007/s12666-017-1046-5
- Chandrasekhar, N., & Vasudevan, M. (2010). Intelligent modeling for optimization of A-TIG welding process. *Materials and Manufacturing Processes*, 25(11), 1341–1350. doi:10.1080/10426914.2010.529584
- Chern, T.-S., Tseng, K.-H., & Tsai, H.-L. (2011). Study of the characteristics of duplex stainless steel activated tungsten inert gas welds. *Materials & Design*, 32(1), 255–263. doi:10.1016/j.matdes.2010.05.056
- Cui, S., Liu, Z., Fang, Y., Luo, Z., Manladan, S. M., & Yi, S. (2017). Keyhole process in K-TIG welding on 4mm thick 304 stainless steel. *Journal of Materials Processing Technology*, 243, 217–228. doi:10.1016/j.jmatprotec.2016.12.027
- De Dinechin, G., Chagnot, C., Castillan, F., Blanchot, O., & Baude, D. (2002). Evaluation of the tolerances of the A-TIG process applied to the welding of 6 mm thick stainless steel pipes. *Weld. Int.*, 16(9), 720–728. doi:10.1080/09507110209549602
- Derringer, G., & Suich, R. (1980). Simultaneous optimization of several response variables. *Journal of Quality Technology*, 12(4), 214–219. doi:10.1080/00224065.1980.11980968
- Devendranath, R. K., Debidutta, M., Ganesh, R. B., Vignesh, M. K., Thiruvengatam, G., Sudharshan, S. P., . . . Rabelc, A. M. (2015). Effect of optimal weld parameters in the microstructure and mechanical properties of autogeneous gas tungsten arc weldments of super-duplex stainless steel UNS S32750. *Material and Design*, 66, 356-365. doi:10.1016/j.matdes.2014.10.084
- Dey, H. C., Albert, S. K., Bhaduri, A. K., & Mudali, U. K. (2013). Activated flux TIG welding of titanium. *Welding in the World*, 57(6), 903-912. doi:10.1007/s40194-013-0084-9
- Dhandha, K. H., & Badheka, V. J. (2015). Effect of Activating Fluxes on Weld Bead Morphology of P91 Steel Bead-on-Plate Welds by Flux Assisted Tungsten Inert Gas Welding Process. *Journal of Manufacturing Processes*, 17, 48–57. doi:10.1016/j.jmapro.2014.10.004
- Feng, Y., Luo, Z., Liu, Z., Li, Y., Luo, Y., & Huang, Y. (2015). Keyhole gas tungsten arc welding of AISI 316L stainless steel. *Materials & Design*, 85, 24–31. doi:10.1016/j.matdes.2015.07.011
- Ganesh, K. C., Balasubramanian, K. R., Vasudevan, M., & Vasantharaja, P. (2016). Chandrasekhar, N. Effect of Multipass TIG and Activated TIG Welding Process on the Thermo-Mechanical Behavior of 316LN Stainless Steel Weld Joints. *Metallurgical and Materials Transactions B*, 47(2), 1347–1362. doi:10.1007/s11663-016-0600-6.
- Garasic, I., Kozuh, Z., & Jurica, M. (2019). Influence of TIG shielding gas composition on weld geometry and corrosion properties of titanium weld joints. *4th International Conference on Smart and Sustainable Technologies (SpliTech), Croatia* (pp. 1-5). IEEE. doi:10.23919/SpliTech.2019.8783175
- Garzón, C., & Ramirez, A. (2006). Growth kinetics of secondary austenite in the welding

- microstructure of a UNS S32304 duplex stainless steel. *Acta Materialia*, 54(12), 3321-3331. doi:10.1016/j.actamat.2006.03.018
- Ghanty, P., Paul, S., Roy, A., Mukherjee, D. P., Pal, N. R., Vasudevan, M., . . . Bhaduri, A. K. (2008). Fuzzy rule based approach for predicting weld bead geometry in gas tungsten arc welding. *Science and Technology of Welding and Joining*, 13(2), 167–175. doi:10.1179/174329308X271751
- Gibbs, J. W. (1878). On the equilibrium of heterogeneous substances. *American Journal of Science*, s3-16(96), 441–458. doi:10.2475/ajs.s3-16.96.441
- Gooch, T. G. (2000). Welding new stainless steels for the oil and gas industry. In *NACE International, 55th Annual Conference and Exposition*,. USA, Orlando.
- Gunn, R. (1997). *Duplex stainless steels: microstructure, properties and applications*. Cambridge, England: Abington.
- Hall, J. N., & Fekete, J. R. (2017). *Steels for auto bodies: A general overview Automotive Steels*. Woodhead. doi:https://doi.org/10.1016/C2015-0-00236-2
- Heiple, C. R., & Roper, J. R. (1982). Mechanism for minor element effect on GTA fusion zone geometry. *Welding Journal*, 61(4), 97–102.
- Hiraoka, K., Okada, A., & Inagaki, M. (1985). Effect of electrode geometry on maximum arc pressure in gas tungsten arc welding. *Quarterly Journal of The Japan Welding Society*, 3(2), 246–252. doi:10.2207/QJWS.3.246
- Howse, D. S., & Lucas, W. (2000). Investigation into arc constriction by active fluxes for TIG (A-TIG). *Science and Technology of Welding and Joining*, 5(3), 189-193. doi:10.1179/136217100101538191
- Huang, H. (2010). Argon-hydrogen shielding gas mixtures for activating flux-assisted gas tungsten arc welding. *Metallurgical and Materials Transactions A*, 41(11), 2829–2835. doi:10.1007/s11661-010-0361-9
- Huang, H. Y. (2009). Effects of shielding gas composition and activating flux on GTAW weldments. *Materials and Design*, 30(7), 2404–2409. doi:10.1016/j.matdes.2008.10.024
- Huang, H. Y., Shyu, S. W., Tseng, K. H., & Chou, C. P. (2005). Evaluation of TIG flux welding on the characteristics of stainless steel. *Science and Technology of Welding and Joining*, 10(5), 566–573. doi:10.1179/174329305X48329
- Huang, H., Shyu, S., Tseng, K., & Chou, C. (2006). Effects of the process parameters on austenitic stainless steel by TIG-flux welding. *Journal of Materials Science and Technology*, 22(3), 367–374. doi:https://www.jmst.org/EN/Y2006/V22/I03/367
- Huang, L., Liu, P., Zhu, S., Hua, X., & Dong, S. (2020). Experimental research on formation mechanism of porosity in magnetic field assisted laser welding of assisted laser welding of steel. *journal of manufacturing processes*, 50, 596–602. doi:10.1016/j.jmapro.2020.01.007
- Huang, Y., Fan, D., & Shao, F. (2012). Alternative current flux zoned tungsten inert gas welding process for aluminium alloys. *Science and Technology of Welding and Joining*, 17(2), 122–127. doi:10.1179/1362171811Y.0000000087
- Ibrahim, H., & Elkhidir, E. (2011). Response surface method as an efficient tool for medium optimisation. *Trends in Applied Sciences Research*, 6(2), 121-129. doi:10.3923/tasr.2011.121.129
- Jana, S. (1992). Effect of heat input on the HAZ properties of two duplex stainless steels. *Journal of Materials Processing Technology*, 33, 247–61. doi:10.1016/0924-0136(92)90211-A
- Jarvis, B. L., & Ahmed, N. U. (2000). Development of keyhole mode gas tungsten arc welding process. *Science and Technology of Welding & Joining*, 5(1), 21–1718. doi:10.1179/136217100322910624

- Jayakrishnan, S., & Chakravarthy, P. (2017). Flux bounded tungsten inert gas welding for enhanced weld performance—a review. *Journal of Manufacturing Processes*, 28, 116–130. doi:10.1016/j.jmapro.2017.05.023
- Jaypuria, S., Khandai, S., Ranjan, T., & Singh, A. (2019). Development of activated flux for deep penetration in GTAW. *Materials Today: Proceedings*, 18, 4703–4710. doi:10.1016/j.matpr.2019.07.456
- Jaypuria, S., Mahapatra, T. R., Sahoo, S., & Jaypuria, O. (2020). Effect of arc length trim and adaptive pulsed-MIG process parameters on bead profile of stainless steel with synergic power source. *Materials Today: Proceedings*, 26(2), 787–795. doi:10.1016/j.matpr.2020.01.027
- Jebaraj, V., & Ajaykumar, L. D. (2017). Weldability, machinability and surfacing of commercial duplex stainless steel AISI2205 for marine applications – A recent review. *Journal of Advanced Research*, 8(3), 183–199. doi:10.1016/j.jare.2017.01.002
- Katopodes, N. D. (2019). *Chapter 2 - Air-water interface*. Free-Surface Flow:, Butterworth-Heinemann. doi:10.1016/B978-0-12-815487-8.00002-0
- Kearns, W. H. (1982). *Welding Handbook, Metals and Their Weldability, Seventh Edition* (Vol. 4). Florida: American Welding Society.
- Khoshnaw, F. (2021). Recovery of the microstructural changes of different duplex stainless steel alloys. *Multidiscipline Modeling in Materials and Structures*, 17 (3), 668–680. doi:https://doi.org/10.1108/MMMS-06-2020-0148
- Korra, N. N., Balasubramanian, K., & Vasudevan, M. (2015). Optimization of activated tungsten inert gas welding of super duplex alloy 2507 based on experimental results. *Proceedings of the Institution of Mechanical Engineers Part B Journal of Engineering Manufacture*, 229(8), 1407–1417. doi:10.1177/095440541453
- Korra, N. N., Vasudevan, M., & Balasubramanian, K. R. (2015). Multi- objective optimization of activated tungsten inert gas welding of duplex stainless steel using response surface methodology. *International Journal of Advanced Manufacturing Technology*, 77(1-4), 67–81. doi:10.1007/s00170-014-6426-y
- Kou, S., & Wang, Y. H. (1986). Computer simulation of convection in moving arc weld pools. *Metallurgical and Materials Transactions A*, 17(12), 2271–2277. doi:10.1007/BF02645925
- Kulkarni, A., Dwivedi, D. K., & Vasudevan, M. (2018). Study of mechanism, microstructure and mechanical properties of activated flux TIG welded P91 Steel-P22 steel dissimilar metal joint. *Materials Science and Engineering A*, 731, 309–323. doi:10.1016/j.msea.2018.06.054
- Kulkarni, A., Dwivedi, D. K., & Vasudevan, M. (2019). Effect of oxide fluxes on activated TIG welding of AISI 316L austenitic stainless steel. *Materials Today: Proceedings*, 18, 4695–4702. doi:10.1016/j.matpr.2019.07.455
- Kumar D, H. (2012). A review on critical aspects of 316ln austenitic stainless steel weldability. *International Journal of Materials Science and Applications*, 1(1), 1-7. doi:10.11648/j.ijmsa.20120101.11
- Kumar, H., & Singh, N. K. (2017). Performance of activated TIG welding in 304 austenitic stainless steel welds. *Materialtoday proceedings*, 4(9), 9914–9918. doi:10.1016/j.matpr.2017.06.293
- Kumar, H., Ahmad, G. N., & Singh, N. K. (2019). Activated flux TIG welding of inconel 718 super alloy in presence of tri-component flux. *Materials and Manufacturing Processes*, 34(2), 216–223. doi:10.1080/10426914.2018.1532581
- Kumar, M. S., Sankarapandian, S., & Shanmugam, N. S. (2020). Investigations on mechanical properties and microstructural examination of activated TIG-welded Nuclear grade stainless steel. *Journal of the Brazilian Society of Mechanical Sciences and*

- Engineering*, 42(6), 292. doi:10.1007/s40430-020-02393-4
- Kuo, C. H., Tseng, K. H., & Chou, C. P. (2011). Effect of Activated TIG Flux on Performance of Dissimilar Welds between Mild Steel and Stainless Steel. *Key Engineering Materials*, 479, 74–80. doi:10.4028/www.scientific.net/KEM.479.74
- Kusano, K., & Watanabe, H. (2002). Recent trends in development of high- efficiency TIG welding; high-deposition TIG welding and ultranarrow-gap TIG welding. *Welding International*, 16(12), 986–991. doi:10.1080/09507110209549651
- Lau, T., & North, T. (1988). Fusion welding of stainless steels. *The Canadian Journal of Metallurgy and Materials Science*, 27(1), 65–77. doi:10.1179/cmj.1988.27.1.65
- Leconte, S., Paillard, P., Chapelle, P., Henrion, G., & Saindrenan, J. (2006). Effect of oxide fluxes on activation mechanisms of tungsten inert gas process. *Science and Technology of Welding and Joining*, 11(4), 389-397. doi:10.1179/174329306X129544
- Leconte, S., Paillard, P., Chapelle, P., Henrion, G., & Saindrenan, J. (2007). Effects of flux containing fluorides on TIG welding process. *Science and Technology of Welding and Joining*, 12(2), 120–126. doi:10.1179/174329307X159810
- Li, H., Zou, J., Yao, J., & Peng, H. (2017). The effect of TIG welding techniques on microstructure, properties and porosity of the welded joint of 2219 aluminum alloy. *Journal of Alloys and Compounds*, 727, 531–539. doi:10.1016/j.jallcom.2017.08.157
- Li, Q., Wang, X., Zou, Z., & Wu, J. (2007). Effect of activating flux on arc shape and arc voltage in tungsten inert gas welding. *Transactions of Nonferrous Metals Society of China*, 17(3), 486–490. doi:10.1016/S1003-6326(07)60120-4
- Li, T. Q., Chen, L., Zhang, Y., Yang, X. M., & Lei, Y. C. (2020). Metal flow of weld pool and keyhole evolution in gas focusing plasma arc welding. *International Journal of Heat and Mass Transfer*, 150, 119296. doi:10.1016/j.ijheatmasstransfer.2019.119296
- Lin, H.-L., & Wu, T.-M. (2012). Effects of activating flux on weld bead geometry of Inconel 718 alloy TIG welds. *Materials and Manufacturing Processes*, 27(12), 1457–1461. doi:10.1080/10426914.2012.677914
- Liu, G., Liu, M., Yi, Y., Zhang, Y., Luo, Z., & Xu, L. (2015). Activated flux tungsten inert gas welding of 8 mm-thick AISI 304 austenitic stainless steel. *Journal of Central South University*, 22(3), 800–805. doi:10.1007/s11771-015-2585-8
- Lowke, J. J., Tanaka, M., & Ushio, M. (2005). Mechanisms giving increased weld depth due to a flux. *Journal of Physics D: Applied Physics*, 38(18), 3438–3445. doi:10.1088/0022-3727/38/18/018
- Lu, S. P., Qin, M. P., & Dong, W. C. (2013). Highly efficient TIG welding of Cr13Ni5Mo martensitic stainless steel. *Journal of Materials Processing Technology*, 213(2), 229–237. doi:10.1016/j.jmatprotec.2012.09.025
- Lu, S., Fujii, H., Sugiyama, H., & Nogi, K. (2003). Mechanism and optimization of oxide fluxes for deep penetration in gas tungsten arc welding. *Metallurgical and Materials Transactions A*, 34(9), 1901–1907. doi:10.1007/s11661-003-0155-4
- Lucas, W. H. (1996). Activating flux - Increasing the performance and productivity of the TIG and plasma processes. *Welding and Metal Fabrication*, 64, 11 – 17.
- Luciano de Azevedo, A. G., Ferraresi, V. A., & Farias, J. P. (2010). Ferritic stainless steel welding with the A-TIG process. *Welding International*, 24(8), 571–578. doi:10.1080/09507110903568794
- Madhusudhan Reddy, G., Mohandas, T., Sambasiva Rao, A., & Satyanarayana, V. V. (2005). Influence of welding processes on microstructure and mechanical properties of dissimilar austenitic-ferritic stainless steel welds. *Materials and Manufacturing Processes*, 20(2), 147–173. doi:10.1081/AMP-200041844
- Maduraimuthu, V., Vasudevan, M., Muthupandi, V., Bhaduri, A. K., & Jayakumar, T. (2012). Effect of activated flux on the microstructure, mechanical properties, and residual

- stresses of modified 9Cr-1Mo steel weld joints. *Metallurgical and Materials Transactions B*, 43(1), 123-13. doi:10.1007/s11663-011-9568-4
- Magudeeswaran, G., Nair, R., Sundar, L., & Harikannan, N. (2014). Optimization of process parameters of activated tungsten inert gas welding for aspect ratio of UNS S32205 duplex stainless steel welds. *Defence Technology*(10), 251-260. doi:10.1016/j.dt.2014.06.006
- Marya, M., & Edwards, G. R. (2002). Interaction between impurities and welding variables in determining GTA weld shape. *Welding Journal*, 81(12), 291-298.
- Matsumoto, T., Misono, T., Fujii, H., & Nogi, k. (2005). Surface tension of molten stainless steels under plasma conditions. *Journal of Materials Science*, 40, 2197–2200. doi:10.1007/s10853-005-1932-9
- McGuire, M. (2008). *Stainless Steels for Design Engineers*. ASM International.
- McPherson, N. A., Chi, K., McLean, M. S., & Baker, T. N. (2003). Structure and properties of carbon steel to duplex stainless steel submerged arc welds. *Materials Science and Technology*, 19(2), 219–226. doi:10.1179/026708303225009643
- Migiakis, K., Daniolos, N., & Papadimitriou, G. D. (2010). Plasma keyhole welding of UNS S32760 super duplex stainless steel: microstructure and mechanical properties. *Materials and manufacturing processes*, 25(7), 598–605. doi:10.1080/10426910903179955
- Mills, K. C., Keene, B. J., Brooks, R. F., & Shirali, A. (1998). Marangoni effects in welding. *Philosophical Transactions of the Royal Society A - Journals*, 356(1739), 911–925.
- Mills, K., & Keene, B. (1990). Factors affecting variable weld penetration. *International Materials Reviews*, 35(1), 185–216. doi:10.1179/095066090790323966
- Mitchell, B. S. (2004). *An Introduction to Materials Engineering and Science for Chemical and Material Engineers*. New Jersey: John Wiley & Sons, Inc. doi:10.1002/0471473359
- Miura, M., Koso, M., Kudo, T., & Tsuge, H. (1990). The effect of nickel and nitrogen on the microstructure and corrosion resistance of duplex stainless steel weldment. *Weld Int*, 4(3), 200–206. doi:https://doi.org/10.1080/09507119009447706
- Modenesi, P. J., Apolinário, E. R., & Pereira, I. M. (2000). TIG Welding with Single-Component Fluxes. *Journal of Materials Processing Technology*, 99(1-3), 260–265. doi:10.1016/S0924-0136(99)00435-5
- Modenesi, P. J., Colen Neto, P., Roberto Apolinário, E., & Batista Dias, K. (2015). Effect of Flux Density and the Presence of Additives in ATIG Welding of Austenitic Stainless Steel. *Welding International*, 29(6), 425–432. doi:10.1080/09507116.2014.932982
- Moghaddam, M. A., & Kolahan, F. (2019). Modeling and optimization of A-TIG welding process using Taguchi method and statistical analysis. *AUT Journal of Mechanical Engineering*, 4(3), 1-9. doi:10.22060/AJME.2019.16890.5839
- Moi, S. C., Rudrapati, R., Bandyopadhyay, A., & Pal, P. K. (2019). Parametric studies on TIG welding of 316L stainless steel by RSM and TLBO. *Materials Science Forum*, 969, 744–749. doi:10.4028/www.scientific.net/MSF.969.744
- Montgomery, C. D. (2001). *Design and analysis of experiments, 5th edn*. New York: Wiley. doi:10.1002/qre.458
- Morisada, Y., Fujii, H., & Xukun, N. (2014). Development of Simplified Active Flux Tungsten Inert Gas Welding for Deep Penetration. *Materials & Design*, 54, 526–530. doi:10.1016/j.matdes.2013.08.081
- Mourad, A., Khourshid, A., & Sharef, T. (2012). Gas tungsten arc and laser beam welding processes effects on duplex stainless steel 2205 properties. *Materials Science and Engineering: A*, 549, 105-113. doi:10.1016/j.msea.2012.04.012
- Muthukumar, V., Bhaduri, A. K., & Raj, B. (2008). *Patent No. US 8,097,826 B2*.
- Muthupandi, V., Bala Srinivasan, P., Seshadri, S., & Sundaresan, S. (2003). Effect of

- weldmetal chemistry and heat input on the structure and properties of duplex stainless steel welds. *Materials Science and Engineering A*, 358(1-2), 9–16. doi:10.1016/S0921-5093(03)00077-7
- Muzamil, M., Wu, J., Akhtar, M., Patel, V., Majeed, A., & J., Y. (2019). Multicomponent enabled MWCNTs-TiO<sub>2</sub> nano-activating flux for controlling the geometrical behavior of modified TIG welding joint process. *Diamond and Related Materials*, 97, 107442. doi:10.1016/j.diamond.2019.107442
- Nasir, N. S., Razab, M. K., Mamat, S., Iqbal, M., & Ahmad. (2016). Review on welding residual stress. *ARP Journal of Engineering and Applied Sciences*, 11(9), 6166–6175.
- Neethu, N., Togita, R., Neelima, P., & Nair, T. (2019). Effect of Nature of Flux and Flux Gap on the Depth-to-Width Ratio in Flux-Bounded TIG Welding of AA6061: Experiments and Numerical Simulations. *Transactions of the Indian Institute of Metals*, 72(6), 1585–1588. doi:10.1007/s12666-019-01654-8
- Nemchinsky, V. A. (1996). The distribution of the electromagnetic force in a welding pool. *Journal of Physics D Applied Physics*, 29(10), 2659–2663. doi:10.1088/0022-3727/29/10/017
- Niagaj, J. (2003). The use of activated fluxes for welding of high alloy steels by A-TIG method. *Weld int*, 17, 257-261. doi:https://doi.org/10.1533/wint.2003.3110
- Niagaj, J. (2014). Ways to improve the efficiency of welding stainless steel. *Weilding International*, 28(1), 45–53. doi:10.1080/09507116.2012.753214
- Nishimoto, K. (2001). Fundamentals of stainless steel welding. Part 1 - structures of stainless steel welds. *Welding International*, 15(1), 74–80. doi:10.1080/09507110109549321
- Noda, T. (1993). Welding thin stainless steel sheet (1) - arc and resistance welding processes. *Welding international*, 7(12), 935–941. doi:10.1080/09507119309548521
- Nowacki, J., & Rybicki, P. (2005). The influence of welding heat input on submerged arc welded duplex steel joints imperfections. *Journal of Materials Processing Technology*, 164-165, 1082–1088. doi:10.1016/j.jmatprotec.2005.02.079
- Okano, S., Tsuji, H., & Mochizuki, M. (2017). Temperature distribution effect on relation between welding heat input and angular distortion. *Science and Technology of Welding and Joining*, 22(1), 59–65. doi:10.1080/13621718.2016.1185313
- Pamnani, R., Vasudevan, M., Jayakumar, T., & Vasantharaja, P. (2017). Development of activated Flux, Optimization of Welding Parameters and Characterization of Weld Joint for DMR-249A Shipbuilding Steel. *Transactions of the Indian Institute of Metals*, 70(1), 49–57. doi:10.1007/s12666-016-0857-0.
- Pandya, D., Badgujar, A., & Ghetiya, N. (2021). A novel perception toward welding of stainless steel by activated TIG welding: a review. *Materials and manufacturing processes*, 36(8), 877-903. doi:10.1080/10426914.2020.1854467
- Parikh, V. K., Badgujar, A. D., & Ghetiya, N. D. (2019). Joining of metal matrix composites using friction stir welding: a review. *Materials and manufacturing processes*, 34(2), 123–146. doi:10.1080/10426914.2018.1532094
- Patel, D., & Jani, S. (2020). ATIG welding: a small step towards sustainable manufacturing. *Advances in Materials and Processing Technologies*, 1–23. doi:10.1080/2374068X.2020.1785209
- Patel, N. P., Badheka, V. J., Vora, J. J., & Upadhyay, G. H. (2019). Effect of oxide fluxes in activated TIG welding of stainless steel 316LN to low activation ferritic/martensitic steel (LAFM) dissimilar combination. *Transactions of the Indian Institute of Metals*, 72(10), 2753–276. doi:10.1007/s12666-019-01752-7
- Paulraj, P., & Garg, R. (2015). Effect of intermetallic phases on corrosion behavior and mechanical properties of duplex stainless steel and super duplex stainless steel. *Advances in Science and Technology*, 9, 87–105. doi:10.12913/22998624/59090

- Poloskov, S. I., Erofeev, V. A., & Logvin, R. V. (2006). Modelling the Distribution of the heat flow and arc pressure in orbital TIG welding. *Welding International*, 20(1), 53–58. doi:10.1533/wint.2006.3565
- Pramanik, A., Littlefair, G., & Basak, A. (2015). Weldability of DuplexStainless Steel. *Materials and Manufacturing Processes*, 30(9), 1053–1068. doi:https://doi.org/10.1080/10426914.2015.1019126
- Ragavendran, M., & Vasudevan, M. (2020). Laser and hybrid laser welding of type 316L(N) austenitic stainless steel plates. *Materials and manufacturing processes*, 35(8), 922–934. doi:10.1080/10426914.2020.1745231
- Ramkumar, D., Pattapu, G., Radhakrishna, V., Tiwari, A., & Anirudh, S. (2016). Studies on the structure–property relationships and corrosionbehaviour of the activated flux TIG welding of UNS S32750. *Journal of Manufacturing Processes*, 23, 231–241. doi:10.1016/j.jmapro.2016.05.006
- Ramkumar, K. D., Chandrasekhar, A., Singh, A. K., Ahuja, S., Agarwal, A., Arivazhagan, N., & Rabel, A. M. (2015). Comparative studies on the weldability, microstructure and tensile properties of autogenous TIG welded AISI 430 ferritic stainless steel with and without flux. *Journal of Manufacturing Processes*, 20, 54–69. doi:10.1016/j.jmapro.2015.09.008
- Ramkumar, K., Ramanand, R., Ameer, A., Simon, K. A., & Arivazhagan, N. (2016). Effect of Post Weld Heat Treatment on the Microstructure and Tensile Properties of Activated Flux TIG Welds of Inconel X750. *Materials Science and Engineering: A*, 658, 326–338. doi:10.1016/j.msea.2016.02.022.
- Ramkumar, K., Varma, N., Chaitanya, G., & S., L. (2017). Experimental investigations on the SiO<sub>2</sub> flux-assisted GTA welding of super-austenitic stainless steels. *International Journal of Advanced Manufacturing Technology*, 93, 129–140. doi:10.1007/s00170-015-7876-6
- Rana, H., Badheka, V., Patela, P., Patel, V., W., L., & J., A. (2021). Augmentation of weld penetration by flux assisted TIG welding and its distinct variants for oxygen free copper. *Journal of Materials Research and Technology*, 10, 138–151. doi:10.1016/j.jmrt.2020.12.009
- Rathod D.W., P. S. (2016). Diffusion control and metallurgical behavior of successive buttering on SA508 steel using Ni–Fe alloy and Inconel 182. *Metallography, Microstructure, and Analysis*, 5(5), 450–460. doi:10.1007/s13632-016-0311-z
- Rathod, D. W., Pandey, S., Aravindan, S., & Singh, P. K. (2017). Metallurgical behaviour and carbon diffusion in buttering deposits prepared with and without buffer layers. *Acta Metallurgica Sinica*, 30(2), 120–132. doi:10.1007/s40195-016-0487-x
- Rodrigues, A., & Loureiro, A. .. (2005). Effect of shielding gas and activating flux on weld bead geometry in tungsten inert gas welding of austenitic stainless steels. *Science and Technology of Welding and Joining*, 10(6), 760–765. doi:10.1179/174329305X68769
- Rückert, G., Huneau, B., & Marya, S. (2007). Optimizing the design of silica coating for productivity gains during the TIG welding of 304L stainless steel. *Materials & Design*, 28(9), 2387–2393. doi:10.1016/j.matdes.2006.09.021
- Rückert, G., Perry, N., Sire, S., & Marya, S. (2014). Enhanced weld penetrations in GTA welding with activating fluxes case studies: plain carbon & stainless steels, titanium and aluminum. *Materials Science Forum*, 783–786, 2804–2809. doi:https://doi.org/10.4028/www.scientific.net/MSF.783-786.2804
- Saidov, R., Mourton, H., Le Gall, R., & Saindrenan, G. (2000). A-TIG welding of UR 52N+ super duplex stainless steel. *Welding International*, 14(8), 633–639. doi:10.1080/09507110009549241
- Sakthivel, T., Panneer Selvi, S., Parameswaran, P., & Laha, K. (2016). Creep deformation and



- rupture behaviour of thermal aged P92 steel. *Materials at High Temperatures*, 33(1), 33–43. doi:10.1179/1878641315Y.0000000016
- Sakthivel, T., Vasudevan, M., Laha, K., Parameswaran, P., Chandravathi, K. S., Mathew, M. D., & Bhaduri, A. K. (2011). Comparison of creep rupture behaviour of type 316L(N) austenitic stainless steel joints welded by TIG and activated TIG welding processes. *Materials Science and Engineering: A*, 528(22-23), 6971–6980. doi:10.1016/j.msea.2011.05.052
- Saluja, R., & Moeed, K. M. (2012). The emphasis of phase transformations and alloying constituents on hot cracking susceptibility of type 304L and 316L stainless steel welds. *International Journal of Engineering, Science and Technology*, 4(5), 2206–2216.
- Sathiya, P., Aravindan, S., Soundararajan, .. R., & A., N. H. (2009). Effect of shielding gases on mechanical and metallurgical properties of duplex stainless-steel welds. *Journal of matererial science*, 44(1), 114-121. doi:10.1007/s10853-008-3098-8
- Savitskii, M. M., & Loskov, G. I. (1980). The mechanism of electrically negative elements on the penetrating power of an arc with a tungsten cathode. *Autom. Weld.*, 9, 17–22.
- Shanmugasundar, G., Karthikeyan, B., Ponvell, P. S., & Vignesh, V. (2019). Optimization of process parameters in TIG welded joints of AISI 304L-austenitic stainless steel using Taguchi's experimental design method. *Materials Today: Proceedings*, 16, 1188–1195. doi:10.1016/j.matpr.2019.05.213
- Sharma, P., & Dwivedi, D. (2019). A--TIG welding of dissimilar P92 steel and 304H austenitic stainless steel: mechanisms, microstructure and mechanical properties. *Journal of Manufacturing Processes*, 44, 166–178. doi:10.1016/j.jmapro.2019.06.003
- Sharma, P., & Dwivedi, D. K. (2019). Comparative study of activated flux-GTAW and multipass-GTAW dissimilar P92 steel-304H ASS joints. *Materials and Manufacturing Processes*, 34(11), 1195–1204. doi:10.1080/10426914.2019.1605175
- Shyu, S. W., Huang, H. Y., Tseng, K. H., & Chou, C. P. (2008). Study of the performance of stainless steel A-TIG welds. *Journal of Materials Engineering and Performance volume*, 17(2), 193–201. doi:10.1007/s11665-007-9139-7
- Sindu, K. (2002). *Welding metallurgy, 2ndEd.* Hoboken, New Jersey: John Wiley & Sons. doi:10.1002/0471434027
- Singh, A. K., Dey, V., & Rai, R. N. (2017). Techniques to improve weld penetration in TIG welding (a review). *Materials Today: Proceedings*, 4(2), 1252-1259. doi:10.1016/j.matpr.2017.01.145
- Singh, A., Dey, V., & Rai, R. (2017). A Study to Enhance the Depth of Penetration in Grade P91 Steel Plate Using Alumina as Flux in FBTIG Welding. *Arabian Journal for Science and Engineering volume*, 42(11), 4959–4970. doi:10.1007/s13369-017-2605-0
- Sire, S., & Marya, S. (2001). New Perspectives in TIG Welding of Aluminium through Flux Application FBTIG Process. *Proceeding of the 7th International Welding Symposium*, (pp. 113–118). Kobe.
- Skvortsov, E. A. (1998). Role of electronegative elements in contraction of the arc discharge. *Welding International*, 12(6), 471–475. doi:10.1080/09507119809448517
- Snow, H. M. (2002). *Investigation of the effect of a surface active flux on the microstructure and properties of gas tungsten arc welds made on a super austenitic stainless steel.* Pennsylvania, USA.
- Song, K., Wang, Z., Hu, S., Zhang, S., & Liang, E. (2018). Welding current influences on Inconel 625/X65 cladding interface. *Materials and Manufacturing Processes*, 33(7), 770–777. doi:10.1080/10426914.2017.1364851
- Sridhar, N., Kolts, J., & Flashe, L. (1985). A duplex stainless steels for chloride environments. *Physical & Mechanical Metallurgy*, 37(3), 31–35. doi:10.1007/BF03258660
- Sun, Z., Kuo, M., Annergren, I., & Pan, D. (2003). Effect of dual torch technique on duplex

- stainless steel welds. *Materials Science and Engineering: A*, 356, 274–282. doi:10.1016/S0921-5093(03)00139-4
- Sunilkumar, D., Muthukumar, S., Vasudevan, M., & Reddy, M. (2020). Effect of friction stir and activated-GTA welding processes on the 9Cr–1Mo steel to 316LN stainless steel dissimilar weld joints. *Science and Technology of Welding and Joining*, 25(4), 311–319. doi:10.1080/13621718.2019.1695347
- Taban, E. (2008). Joining of duplex stainless steel by plasma Arc, TIG, and plasma Arc+TIG welding processes. *Materials and Manufacturing Processes*, 23(8), 871–878. doi:10.1080/10426910802385075
- Tanaka, M. (2005). Effects of surface active elements on weld pool formation using TIG arcs. *welding International*, 19(11), 870–876. doi:10.1533/wint.2005.3517
- Tanaka, M., Shimizu, T., Terasaki, T., Ushio, M., & Koshi-ishi, F. (2000). Effects of activating flux on arc phenomena in gas tungsten arc welding. *Science and Technology of Welding and Joining*, 5(6), 397–402. doi:10.1179/136217100101538461
- Tanaka, M., Terasaki, H., Fujii, H., Ushio, M., Narita, R., & Kobayashi, K. (2006). Anode heat transfer in TIG welding and its effect on the cross-sectional area of weld penetration. *Welding International*, 20 (4), 268–274. doi:https://doi.org/10.1533/wint.2006.3577
- Tathgir, S., Bhattacharya, A., & Bera, T. K. (2015). Influence of current and shielding gas in TiO<sub>2</sub> flux activated TIG welding on different graded steels. *Materials and Manufacturing Processes*, 30(9), 1115–1123. doi:10.1080/10426914.2014.973591
- Tathgir, S., Rathod, D. W., & Batish, A. (2019). A-TIG welding process for enhanced-penetration in duplex stainless-steel: effect of activated fluxes. *Materials and Manufacturing Processes*, 34(15), 1659–1670. doi:10.1080/10426914.2019.1666990
- Thomson, J. (1855). XLII. On certain curious motions observable at the surfaces of wine and other alcoholic liquors. *London, Edinburgh, Dublin Philos. Mag. J. Sci.*, 10(67), 330–333. doi:10.1080/14786445508641982
- Toppo, A., Pujar, M., & Arivazhagan, B. V. (2016). Arivazhagan, B.; Vasudevan, M.; Mallika, Corrosion behaviour of 304LN activated tungsten inert gas and flux-cored arc weld metals. *The International Journal of Corrosion Processes and Corrosion Control*, 51(4), 295–307. doi:10.1080/1478422X.2015.1104065
- Tsai, N. S., & Eagar, T. W. (1985). Distribution of the heat and current fluxes in gas tungsten arcs. *Metallurgical and Materials Transactions B*, 16(4), 841–846. doi:10.1007/BF02667521
- Tseng, K. (2013). Development and application of oxide-based flux powder for tungsten inert gas welding of austenitic stainless steels. *Powder Technology*, 233, 72–79. doi:10.1016/j.powtec.2012.08.038
- Tseng, K. H., & Chen, K. L. (2012). Comparisons between TiO<sub>2</sub>- and SiO<sub>2</sub>-flux assisted TIG welding processes. *Journal of Nanoscience and Nanotechnology*, 12(8), 6359–6367. doi:10.1166/jnn.2012.6419
- Tseng, K. H., Chen, Y. C., & Chen, K. L. (2012). Cr<sub>2</sub>O<sub>3</sub> flux assisted TIG welding of type 316L stainless steel plates. *Applied Mechanics and Materials*, 121-126, 2592–2596. doi:10.4028/www.scientific.net/AMM.121-126.2592
- Tseng, K., & Chuang, K.-J. (2012). Application of iron-based powders in tungsten inert gas welding for 17Cr–10Ni–2Mo alloys. *Powder Technology*, 228, 36–46. doi:10.1016/j.powtec.2012.04.047
- Tseng, K.-H., & Hsu, C.-Y. (2011). Performance of activated TIG process in austenitic stainless steel welds. *Journal of Materials Processing Technology*, 211(3), 503–512. doi:10.1016/j.jmatprotec.2010.11.003
- Vasantharaja, P., & Vasudevan, M. (2018). Optimization of A-TIG welding process parameters for RAFM steel using response surface methodology. *Proceedings of the Institution of*

- Mechanical Engineers*, 232(2), 121–136. doi:10.1177/1464420715619192
- Vasantharaja, P., Maduarimuthu, V., Vasudevan, M., & Palanichamy, P. (2012). Assessment of residual stresses and distortion in stainless steel weld joints. *Materials and Manufacturing Processes*, 27(12), 1376–1381. doi:10.1080/10426914.2012.663135
- Vasantharaja, P., Vasudevan, M., & Parameswaran, P. (2019). Effect of welding techniques on the microstructure and mechanical properties of reduced activation ferritic-martensitic (RAFM) steel weld joints. *Fusion Engineering and Design*, 148, 111289. doi:10.1016/j.fusengdes.2019.111289
- Vasudevan, M., Arunkumar, V., Chandrasekhar, N., & Maduraimuthu, V. (2010). Genetic algorithm for optimisation of A-TIG welding process for modified 9Cr–1Mo steel. *Science and Technology of Welding and Joining*, 15(2), 117–123. doi:10.1179/136217109X12577814486773
- Vasudevan, M., Bhaduri, A. K., Raj, B., & Rao, K. P. (2007). Genetic- algorithm-based computational models for optimizing the process parameters of A-TIG welding to achieve target bead geometry in type 304 L(N) and 316 L(N) stainless steels. *Materials and Manufacturing Processes*, 22(5), 641–649. doi:10.1080/10426910701323342
- Venkatesan, G., George, J., Sowmyasri, M., & Muthupandi, V. (2014). Effect of Ternary Fluxes on Depth of Penetration in A-TIG Welding of AISI 409 Ferritic Stainless Steel. *Procedia Materials Science*, 5, 2402–2410. doi:10.1016/j.mspro.2014.07.485
- Venkatesan, G., Muthupandi, V., & Fathaha, A. (2017). Effect of Oxide Fluxes on Depth of Penetration in Flux Bonded Tungsten Inert Gas Welding of AISI 304L Stainless Steel. *Transactions of the Indian Institute of Metals*, 70(6), 1455–1462. doi:10.1007/s12666-016-0942-4
- Venkatesan, G., Muthupandi, V., & Justine, J. (2017). Activated TIG welding of AISI 304L using mono- and tri-component fluxes. *Journal of Advanced Manufacturing Technology*, 93(1-4), 329–336. doi:10.1007/s00170-016-9002-9
- Vidyarthi, R. S., & Dwivedi, D. K. (2016). Activating flux tungsten inert gas welding for enhanced weld penetration. *Journal of Manufacturing Processes*, 22, 211–228. doi:10.1016/j.jmapro.2016.03.012
- Vidyarthi, R. S., & Dwivedi, D. K. (2017). Analysis of the corrosion behavior of an A-TIG welded SS 409 weld fusion zone. *Journal of Materials Engineering and Performance*, 26(11), 5375–5384. doi:10.1007/s11665-017-3022-y
- Vidyarthi, R. S., & Dwivedi, D. K. (2018). A comparative study on creep behavior of AISI 409 ferritic stainless steel in as-received and as-welded condition (A-TIG and M-TIG). *Materials Today: Proceedings*, 5(9), 17097–17106. doi:10.1016/j.matpr.2018.04.117
- Vidyarthi, R. S., & Dwivedi, D. K. (2018). Microstructural and mechanical properties assessment of the P91 A-TIG weld joints. *Journal of Manufacturing Processes*, 31, 523–535. doi:10.1016/j.jmapro.2017.12.012
- Vidyarthi, R. S., Dwivedi, D. K., & Muthukumaran, V. (2018). Optimization of A-TIG process parameters using response surface methodology. *Materials and Manufacturing Processes*, 33(7), 709–717. doi:10.1080/10426914.2017.1303154
- Vidyarthi, R. S., Dwivedi, D. K., & Vasudevan, M. (2017). Influence of M-TIG and A-TIG welding process on microstructure and mechanical behavior of 409 ferritic stainless steel. *Journal of Materials Engineering and Performance*, 26(3), 1391–1403. doi:10.1007/s11665-017-2538-5
- Vidyarthi, R. S., Kulkarni, A., & Dwivedi, D. K. (2017). Study of microstructure and mechanical property relationships of A-TIG welded P91– 316L dissimilar steel joint. *Materials Science and Engineering: A*, 695, 249–257. doi:10.1016/j.msea.2017.04.038
- Vidyarthi, R., & Dwivedi, D. (2019). Weldability evaluation of 409 FSS with A-TIG welding process. *Material today proceedings*, 18, 3052–3060. doi:10.1016/j.matpr.2019.07.177

- Vidyarthi, S., & Sivateja, P. (2020). Influence of activating flux tungsten inert gas welding on mechanical and metallurgical properties of the mild steel. *Materials Today: Proceedings*. doi:10.1016/j.matpr.2019.12.335
- Vijay, S. J., Mohanasundaram, S., Ramkumar, P., Kim, H. G., Tugirumubano, A., & Go, S. H. (2020). *Experimental investigations on activated-TIG welding of Inconel 625 and AISI 304 alloys*. Springer, Singapore. doi:10.1007/978-981-15-1307-7\_34
- Vora, J. J., Abhishek, K., & Srinivasan, S. (2019). Attaining optimized A-TIG welding parameters for carbon steels by advanced parameter-less optimization techniques: with experimental validation. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 41(6), 261. doi:10.1007/s40430-019-1765-0
- Vora, J., & Badheka, V. (2016). Improved Penetration with the Use of Oxide Fluxes in Activated TIG Welding of Low Activation Ferritic/Martensitic Steel. *Transactions of Indian Institute of Metals*, 69(9), 1755-1764. doi:10.1007/s12666-0
- Vora, J., & Badheka, V. (2017). Experimental investigation on microstructure and mechanical properties of activated TIG welded reduced activation ferritic/martensitic steel joints. *Journal of Manufacturing Processes*, 25, 85–93. doi:10.1016/j.jmapro.2016.11.007
- Wang, S., Nates, R., Pasang, T., & Ramezani, M. (2015). Modelling of gas tungsten arc welding pool under marangoni convection. *Universal Journal of Mechanical Engineering*, 3(5), 185–201. doi:10.13189/ujme.2015.030504
- Wang, X., Huang, J., Huang, Y., Fan, D., & Guo, Y. (2017). Investigation of heat transfer and fluid flow in activating TIG welding by numerical modeling. *Applied Thermal Engineering*, 113, 27–35. doi:10.1016/j.applthermaleng.2016.11.008
- Wu, B., Wang, B., Zhao, X., & Peng, H. (2018). Effect of Active Fluxes on Thermophysical Properties of 309L Stainless-Steel Welds. *Journal of Materials Processing Technology*, 255, 212–218. doi:10.1016/j.jmatprotec.2017.12.018
- Wu, C., & Gao, J. (2002). Analysis of the heat flux distribution at the anode of a TIG welding arc. *Computational Materials Science*, 24(3), 323-327. doi:10.1016/S0927-0256(01)00254-3
- Yadaiah, N., & Bag, S. (2013). Role of oxygen as surface-active element in linear GTA welding process. *Journal of Materials Engineering and Performance*, 22(11), 3199–3209. doi:10.1007/s11665-013-0621-0