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Personal Details

Name: Mehdi Tajaldini

Nationality: Iran

Date of birth: 1981/04/22

Age: 34 years

Degree: PhD of Photonics

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Personal profile:

I have studied on the photonic fields such as optical devices in linear and nonlinear regimes, nonlinear optics in planar integrated devices to aim the programmable logic devices, theoretical and numerical method for studying the optical waveguides, simulation, modeling and designing optical couplers, and sensing applications in photonics. Furthermore, optical power splitter, switch, logic-gates, programmable logic devices, secure switch and bio sensors have been some part of my study. My field of research has been optical engineering whereas the optical applications and photonics devices are vital part of study.

Graphene has recently been shown to possess giant nonlinearity, however, the utility of this nonlinearity is limited due to high losses and small interaction volume. We are going to show that by performing MMI waveguide engineering to graphene's nonlinearity, we are able to dramatically increase the nonlinear parameter and decrease the switching optical power to sub-watt levels, also decrease the power and increase the bandwidth. The ability to control the graphene refractive index give us an opportunity to have best structures

in optical digital processing. Temporal characterizations, bandwidth measurement and processing speed should be our aims to continue.

Nowadays, there is no laser beam with micro diameter beam profile to launch the micro device inputs that have sub-micro size, practically. Therefore, the innovation a laser that able to produce sub-micro or nano profile beam is critical interest. There is no way to achieve except implementing the phonetic to innovate supposed lasers. Thus, now, I am working on the phonetic lasers to achieve the ability of produce sub-micro or nano beam laser so that I can apply it as a source in photonics devices either in linear and nonlinear regimes.

Education and qualifications:

I have graduated in Jul. 2004 in the field of Atomic Physics in bachelor's degree with grand average 15.37 (out of 20) and have graduated in Sept. 2007 in the field of Laser Physics in master degree with grand average 17.5 (out of 20) from university of Vali-Asr Rafsanjan Iran. I have graduated in PhD degree in field of Applied and Engineering Physics from Universiti Sains Malaysia on 6 of May 2015.

Work Experiences:

I have taught in Azad universities for 10 years.

GRA in below mentioned grants:

- 1) Universiti Sains Malaysia Research University Grant (RU) No. 1001/PFIZIK/811220. Title: All optical switch using individual MMI coupler and optimizing insertion loss, uniformity and switching performance error in MMI via length and width of multimode waveguide and position and angle of the access waveguides.
- 2) Education Ministry Fundamental Research Grant Scheme (FRGS) Grant No. 203/PFIZIK/6711349. Title: The Behavior of Nonlinear Optics on Lightwave Propagation in Multimode Interference Waveguides.
- 3) Universiti Sains Malaysia Short Term Research Grant No. 304/PFIZIK/6311082. Title: An Investigation of Near Critical Angle Propertises of Unclading Fibre Sensors with Determination of Heavy Metal and Nitrite Contamination in Water using Unclading Fibre Sensors.

Now I am working as the head of Electrical engineering groap in Azad University.

As Reviewer

I have reviewed more than 20 papers for below listed journals.

Optics letters (OSA)

Applied Optics(OSA)

Optics Express(OSA)

Lightwave Technology (IEEE&OSA)

Optics Communications (Elsevier)

Optica Applicata

Ceramics International (Elsevier)

Optics Letters China

And work as editor for SPG

LIST OF PUBLICATIONS

1- PUBLICATIONS

1. M. Tajaldini and M. Z. M. Jafri. "Simulation of an Ultra-Compact Multimode Interference Power Splitter Based on Kerr Nonlinear Effect" IEE. Journal of Lightwave Technology, vol. 32, pp. 1282 - 1289, (2014). IF: 2.84
2. M. Tajaldini, M. Z. M. Jafri. "An ultra-compact multimode interference coupler as an optimum all-optical switch based on nonlinear modal propagation analysis", Optics Communication, vol. 324, pp. 85–92 (2014). IF: 1.56
3. M. Tajaldini, M. Z. M. Jafri. All-optical Sensor Based on Nonlinear Multimode Interference Coupler Features. Journal of Optica Applicata, vol. XLV, 2015. IF: 0.66
4. M. Tajaldini, and M. Z. M. Jafri. "Ultra Compact 1×11 Power Splitter Using Polydiacetylene Multimode Interference Coupler" Advanced Materials Engineering and Technology, vol. 626, pp. 853-860 (2012).
5. M. Tajaldini, and M. Z. M. Jafri. An optimum multimode interference coupler as an all-optical switch based on nonlinear modal propagation analysis, Optik, 126, 436-441, 2014. IF: 0.8
6. M. Tajaldini, and M. Z. M. Jafri. Power Uniformity Optimization via Output Width in a Nonlinear Multimode Interference Power Splitter, Journal of Applied Science and Agriculture, 9, 66-71, 2014.
7. M. Tajaldini, M. Z. M. Jafri. All-optical biological sensor based on nonlinear effects in multimode interferences waveguides. Journal of Optics, In press. IF: 1.5

8. M. Tajaldini, and M. Z. M. Jafri. "Nonlinear modal propagation analysis method in multimode interference coupler for operation development" AIP. Proc, vol. 1528, pp. 450-455 (2013).
9. M. Tajaldini, and M. Z. M. Jafri. "The influence of nonlinear modal propagation analysis on MMI power splitters for miniaturization" Proc. SPIE, vol. 8789, pp. 1-4 (2013).
10. M. Tajaldini, and M. Z. M. Jafri. "Nonlinear multimode interference coupler for biological sensing" European Conference on Biomedical Optics (OSA conference paper), vol. 880103, May 12-16, (2013).
11. M. Tajaldini, M. Z. M. Jafri. "Proposal of a novel method for all optical switching with MMI coupler" Proc. SPIE, vol. 8545. pp. 1-7 (2012).
12. M. Tajaldini, M. Z. M. Jafri. Contribution of single-mode waveguides width on switching operation in ultra-compact nonlinear multimode interference coupler, AIP. Proc, 149-153, 1621, 2014.
13. M. Tajaldini and M. Z. M. Jafri. All optical switch using ultra compact multi mode interference coupler. IEEE Explorer, 13266338, 370 – 373, 2012.
14. M. Tajaldini, and M. Z. M. Jafri. Proposal of ultra-compact NAND/NOR/XNOR all-optical logic gates based on a nonlinear 3x1 multimode interference, Proc. SPIE, 9136, 1-7, 2014.
15. M. Tajaldini, and M. Z. M. Jafri. Contribution of single-mode waveguides width on switching operation in ultra-compact nonlinear multimode interference coupler, AIP.Proc, 1621, 149-153, 2015.
16. M. Tajaldini, and M. Z. M. Jafri. Arbitrary-ratio power splitter based on nonlinear multimode interference coupler, AIP.Proc, 1657, 140005, 2015.
17. M. Tajaldini, and M. Z. M. Jafri. All-optical universal logic gates on nonlinear multimode interference coupler using tunable input intensity, AIP.Proc, 1657, 140002, 2015.
18. M. Tajaldini, M. Z. M. Jafri, H. S. Lim, and K. C. Tan, Self-phase modulation on a graphene used waveguide, SPIE 9894, Nonlinear Optics and its Applications IV, 989419 (April 27, 2016);

2- CONFERENCE

1. M. Tajaldini and M. Z. M. Jafri, All-Optical Biological Sensor Based on Nonlinear Effects in Multimode Interferences waveguides, The International Conference on Natural Sciences, (ICONC), September 25-28, 2014, East Java Indonesia.

2. M. Tajaldini, and M. Z. M. J, Self-focusing Appearance in Ultra-compact 3×3 Multimode Interference Coupler Based on Silicon on Insulator, The International Conference on Industrial Engineering and Engineering Management (IEEM), December 9-12, 2014, Selangor, Malaysia.
3. M. Tajaldini, and M. Z. M. Jafri, All-Optical Universal Logic Gates on Nonlinear Multimode Interference Coupler Using Tunable Input Intensity, National Physics Conference (PERFIK), November 18-19, 2014, Selangor, Malaysia.
4. M. Tajaldini, and M. Z. M. Jafri, Arbitrary-ratio Power Splitter based on Nonlinear Multimode Interference Coupler, National Physics Conference (PERFIK), November 18-19, 2014, Selangor, Malaysia.
5. M. Tajaldini, and M. Z. M. Jafri, Nonlinear Modal Propagation Analysis Method in Multimode Interference Coupler for Operation Development, National Physics Conference (PERFIK), November 19-21, 2012, Pahang, Malaysia.
6. M. Tajaldini, M. Z. M. Jafri, The influence of nonlinear modal propagation analysis on MMI power splitters for miniaturization, Optical Metrology Conference, May 13, 2013, Munich, Germany.
7. M. Tajaldini, and M. Z. M. Jafri, Proposal of a novel method for all optical switching with MMI coupler, SPIE Security+ Defence Conference, September 24, 2012, Edinburgh, United Kingdom.
8. M. Tajaldini, and M. Z. M. Jafri, Ultra-Compact 1× 11 Power Splitter Using Polydiacetylene Multimode Interference Coupler, International Conference on Advanced Material Engineering & Technology (ICAME), November 28-30, Penang, Malaysia.
9. M. Tajaldini, and M. Z. M. Jafri, Contribution of single-mode waveguides width on switching operation in ultra-compact nonlinear multimode interference coupler. 3rd International Conference on Fundamental and Applied Sciences (ICFAS), June 3-5, 2014, Kuala Lumpur, Malaysia.
10. M. Tajaldini, and M. Z. M. Jafri, Proposal of ultra-compact NAND/NOR/XNOR all-optical logic gates based on a nonlinear 3x1 multimode interference, Photonics Europe Conference, April 14, 2014, Brussels, Belgium.
11. M. Tajaldini, and M. Z. M. Jafri, Nonlinear multimode interference coupler for biological sensing, European Conference on Biomedical Optics, May 12-16, 2013, Munich Germany.

12. M. Tajaldini, and M. Z. M. Jafri, All-optical switch using ultra compact multimode interference coupler, 10th IEEE International Conference on Semiconductor Electronics (ICSE), September 25-26, 2012, Kuala Lumpur.
13. M. Tajaldini, and M. Z. Jafri, Power Uniformity Optimization Via Output Width in a Nonlinear Multimode Interference Power Splitter, International Postgraduate Conference on Social Science Research (IPCEM) 2014, 17-18 October, Langkawi, Malaysia
14. M. Tajaddini and A. Mahmoodi, Comparison of linear and nonlinear regimes in MMI coupler, 2011 International conference in advances in science and technology.
15. M. Tajaddini and M. khanzadeh, All-optical switches in photonics integrated circuits, 2011 National conference on optical engineering, Esfahan Iran.