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**Professor of Organic Chemistry**

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### ***Abstract***

The “growth mindset” roots in my interdisciplinary education that includes BS in *Biology*, BS in *Premedical Sciences*, MS in *Photochemistry*, PhD in *Organic Chemistry*, and a Postdoc in *Cancer Research*. My career has flourished through teaching 20 diverse courses at BS, MS, and PhD levels. I have supervised 51 MS theses, 30 PhD dissertations, and directed one postdoc. Together, we have published 233 articles in more than 70 different scientific journals; delivered over 300 international seminars; registered 10 patents, translated 3 articles and published one book. Experimentally, I designed, synthesized, and characterized highly pure, recoverable and economically sound, magnetic or non-magnetic, nano or non-nano, new green compounds in high yields. They have found their applications in industry, medicine, agriculture, dentistry, *etc.* In my theoretical quests, I have reached for experimentally unreachable transition states and short lived reactive intermediates such as carbenes, silylenes, germynes, stanynes, plumbylenes, *etc.*

Finally, I have had the honor of serving as a referee for a number of international journals in different scientific communities.

# ***Academics***

## **Postdoctoral in Cancer Research**

"Synthesis of radioactive labeled unusual mutagenic polyenes, found in colon cancer patients, and their binding to DNA"

Virginia Polytechnic Institute and State University, Blacksburg, VA, USA

<https://www.virginia.gov/agencies/virginia-polytechnic-institute-and-state-university>

## **PhD in Organic Chemistry (Reactive Intermediates)**

"Generation and characterization of conjugated monocyclic C<sub>9</sub>H<sub>8</sub> carbenes"

University of Montana, Missoula, MT, USA <https://10times.com/venues/university-of-montana>

## **MS in Organic Photochemistry**

"Photochemistry of  $\beta$ -methyl- $\beta$ -nitrostyrene and its derivatives"

Western Kentucky University, BowlingGreen, KY, USA <https://www.wku.edu>

## **BS in Biology and Premedical Sciences**

University of Oregon, Eugene, OR, USA <https://www.uoregon.edu>

## Scientific Publications (Selected 233papers)

1. Soroudi, SH.; Kassae, M.Z., "Effects of N-substitution on CO<sub>2</sub> trapping by cyclic vinylidenes at DFT levels", *Structural Chemistry*, **2023**, *34*, 467–476.
2. Soroudi, SH.; Kassae, M.Z., "Capture of CO<sub>2</sub> by O, S, and Se substituted triplet N-heterocyclic vinylidenes: A theoretical comparison", *Journal of Physical Organic Chemistry*, **2023**, *34*(7), 74-82.
3. Ahmadi, A.A.; Ayoubi-Chianeh, M.; Kassae, M.Z.; Bayat, F., "Inclusion complexes of atorvastatin calcium (ATV-Ca) and rosuvastatin calcium (ROV-Ca) drugs with  $\alpha$ -CD,  $\beta$ -CD,  $\gamma$ -CD, HP- $\beta$ -CD, M- $\beta$ -CD, and maltodextrin along with their characterizations through experimental and computational methods" *The Canadian Journal of Chemical Engineering* **2023**, *101*(7), 4200-4216.
4. Abedini, N.; Amouzgar, D.; Kassae, M.Z.; Zamani, M., "Theoretical descriptions of novel silicon analogs of cyclo[18]carbo", *Journal of Physical Organic Chemistry*, **2023**, *36*(7), e4501.
5. Mohammadian Souri, S.; Eidi, S.; Kassae, M.Z., "Efficient Suzuki coupling over novel magnetic nanoparticle: Fe<sub>3</sub>O<sub>4</sub>/L-(+)-tartaric acid/Pd(0)", *Molecular Diversity*, **2023**, *27*, 1469-1479.
6. Soroudi, SH.; Kassae, M.Z., "Capture of CO<sub>2</sub> by novel diiodo-N,N-imidazoliumvinylidene: A theoretical quest", *Journal of Physical Organic Chemistry*, **2022**, *35* (5), e4323.
7. Soroudi, SH.; Kassae, M.Z., "CO<sub>2</sub> trapping of selected N-heterocyclic vinylidenes with an NBO mechanistic scrutiny by DFT", *Journal of the Chinese Chemical Society*, **2022**, *69* (4), 646-656.
8. Abedini, N.; Kassae, M.Z., "Estimating structure, stability, and electronic properties on halogenated derivatives of 2-germabicyclo[1.1.1.]pentane-2-ylidenes at density functional theory", *Journal of Molecular Modeling*, **2022**, *28* (8), 1-11.
9. Abedini, N.; Kassae, M.Z., "The effects of halogen substituents on structure, stability, and electronic properties of bicyclo[1.1.1]pentanylene at density functional theory", *Journal of Physical Organic Chemistry*, **2022**, *35* (3), e4304.

10. Abedini, N.; Kassae, M.Z., "Estimating the Stability and Reactivity of Bicyclic Silylenes and their Halogenated Derivatives at DFT", *Silicon*, **2022**, *14*, 6777-6785.
11. Abedini, N.; Kassae, M.Z., "Theoretical descriptions of novel bicyclic stannylenes and their halogenated derivatives", *Journal of the Iranian Chemical Society*, **2022**, *19*, 3837-3843.
12. Abedini, N.; Kassae, M.Z., "Substituent Effect on Structure, Stability, and Electronic Properties of the Novel Bicyclic Silylenes at DFT", *Silicon*, **2022**, *14*, 2089-2095.
13. Ahmadi, A.A.; Kassae, M.Z.; Ayoubi-Chianeh, M.; Fattahi, A.R., "Gold at crossroads of radical generation and scavenging at density functional theory level: Nitrogen and oxygen free radicals vs. their precursors in the face of nanogold", *Journal of Physical Organic Chemistry*, **2021**, *34* (1), e4126.
14. Abedini, N.; Kassae, M.Z., "Substitution effects on novel bicyclo[2.2.1]hepta-7-silylenes by DFT", *Journal of Molecular Modeling*, **2021**, *27*, 1-13.
15. Abedini, N.; Kassae, M.Z., "A quest for stable bicyclic carbenes with one, two, and three carbonic centers at theoretical level", *Structural Chemistry*, **2021**, *32*, 1105–1112.
16. Ayoubi-Chianeh, M.; Kassae, M.Z., "Stable four-membered cyclosilylenes at theoretical levels", *Journal of the Chinese Chemical Society*, **2021**, *68* (4), 541-550.
17. Abedini, N.; Kassae, M.Z., "Estimating the stability and reactivity of novel bicyclic germlyenes at density functional theory", *Journal of Physical Organic Chemistry*, **2021**, *34* (8), e4208.
18. Nasresfahani, Z.; Kassae, M.Z., "Bimetallic Ni/Cu mesoporous silica nanoparticles as an efficient and reusable catalyst for the Sonogashira cross-coupling reactions", *Journal of Organometallic Chemistry*, **2021**, *937*, 1-6.
19. Nasresfahani, Z.; Kassae, M.Z., "Nickel-Copper bimetallic mesoporous nanoparticles: As an efficient heterogeneous catalyst for N-alkylation of amines with alcohols", *Applied Organometallic Chemistry*, **2021**, *35* (1), e6032.
20. Rahmi, K.; Kassae, M.Z.; Khorshidvand, N., "Comparison of bis(alkylthio)carbenes by density functional and second-order Møller–Plesset perturbation theory", *Journal of Physical Organic Chemistry*, **2021**, *34* (1), e4122.

21. Soleimani Purlak, N.; Kassae, M.Z., "New N-heterocyclic mono- and disilavinylidene iron-complexes by density functional theory", *Journal of Physical Organic Chemistry*, **2021**, *34* (3), e4148.
22. Abedini, N.; Kassae, M.Z.; Cummings, P.T., "Borasilylenes in Focus: Topological Effects of Nitrogen Atoms by DFT", *Silicon*, **2021**, *13*, 3377-3383.
23. Eidi, E.; Kassae, M.Z.; Nasresfahani, Z., "Efficient synthesis of symmetrical anhydrides by cross dehydrogenative coupling of aryl aldehydes over CuFe<sub>2</sub>O<sub>4</sub> nanoparticles", *Chemical Monthly*, **2021**, *152*, 461-468.
24. Ayoubi-Chianeh, M.; Kassae, M. Z., "New Hydroxylated Cyclic and Acyclic Silylenes via DFT", *Silicon*, **2021**, *13*, 1-13.
25. Mohebi, N.; Kassae, M.Z., "New N-heterocyclic plumblyenes (NHPbs) and their complexes with palladium and platinum by DFT", *Structural Chemistry*, **2021**, *32*, 731-757.
26. Mohebi, N.; Kassae, M.Z., "New N-heterocyclic plumblyenes (NHPbs) and their complexes with palladium and platinum by DFT", *Structural Chemistry*, **2021**, *32*, 731-757.
27. Ahmadi, A.A.; Kassae, M.Z.; Ayoubi-Chianeh, M.; Fattahi, A.R., "New pathways of stability for NHCs derived from azole, di-azole, n-tetrazole, and ab-tetrazole, by DFT" *Journal of Molecular Modeling*, **2020**, *26* (11), 324.
28. Safaei, S.; Kassae, M.Z.; Khorshidvand, N.; Ahmadi, A.A., "Effects of H-bonding and structural constituents on the acidity and potential "anticancer activity" of D-mandelonitrile-β-D-glucuronic acid by density functional theory", *Research on Chemical Intermediates*, **2020**, *46*, 4359-4381.
29. Soleimani Purlak, N.; Kassae, M.Z., "From singlet R<sub>2</sub>Si silylene to triplet R<sub>2</sub>Si=Si ground state by DFT", *Journal of Physical Organic Chemistry*, **2020**, *33* (6), e4053.
30. Kassae, M.Z.; Khorshidvand, N., "Study of electronic effects on normal vs. abnormal tetrazol-5-ylidenes at DFT", *Iranian J. Chem. Chem. Eng.*, **2020**, *39* (6), 63-74.
31. Ayoubi-Chianeh, M.; Kassae, M.Z., "Novel halogenated cyclopentasilylene-2,4-dienes via DFT", *Journal of the Chinese Chemical Society*, **2020**, *67* (5), 692-702.
32. Abedini, N.; Kassae, M.Z., "A theoretical investigation into novel germlyenes: Effects of nitrogen substitution on stability and multiplicity", *Journal of Molecular Modeling*, **2020**, *26*, 1-11.

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37. Abedini, N.; Kassaee, M.Z.; Cummings, P.T., "Effects of nitrogen atoms on the stability and reactivity of tricyclicboracarbenes by DFT", *Theoretical Chemistry Accounts*, **2020**, *139*, 1-11.
38. Ayoubi-Chianeh, M.; Kassaee, M.Z. "A quest for (sila)<sub>0-4</sub> cyclopentasilenylenes and their Arduengo analogs by DFT", *Silicon*, **2020**, *13*, 960-939.
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43. Ayoubi-Chianeh, M.; Kassaee, M.Z., "DFT Study of new P-heterocyclic silylenes", *Journal of Structural Chemistry*, **2020**, *61*, 1079-1087.
44. Khorshidvand, N.; Kassaee, M.Z.; Safaei, S., "Substituent effects on novel diaminovinyldenes by DFT", *Research on Chemical Intermediates*, **2020**, *46*, 2289-2308.
45. Ashenagar, S.; Kassaee, M.Z.; Khorshidvand, N., "Novel tetrazol-5-germavinylidenes with triplet monomeric, normal, and abnormal forms studied using DFT method", *Journal of Physical Organic Chemistry*, **2019**, *33* (5), 1-9.

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47. Ashenagar, S.; Kassaee, M.Z.; Cummings, P., "Novel triplet germynes in focus: normal vs. abnormal triplet exocyclic tetrazol-5-vinylidene germynes at DFT", *Journal of Molecular Modeling*, **2019**, *25*, 371.
48. Khorshidvand, N.; Kassaee, M.Z., "Electronic effects on diaminocarbenes: a theoretical quest", *Journal of Physical Organic Chemistry*, **2019**, *32* (10), e3996.
49. Zamanzadeh, A.H.; Mohebi, N.; Kassaee, M.Z.; Cumming, P.T.; Dong, K., "Novel N-heterocyclic Stannylenes (NHSns) Using DFT", *Iranian Chemical Society*, **2019**, *7* (3), 511-521.
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54. Miranzadeh, M.; Kassaee, M. Z.; Sadeghi, L., "Analysis of Preservative Capacity for Contemporary Iranian Shampoos", *Adv J Chem A*, **2019**, *2* (1), 45-56.
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200. Kassae, M.Z.; Musavi, S.; Ghambarian, M., "A quest for triplet silylenes  $XHSi_3$  at *ab initio* and DFT levels (X= H, F, Cl and Br)", *Journal of Organometallic Chemistry*, **2006**, *691* (9), 1845-1856.
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222. **OKassaee, M.Z.**; Azarnia, J.; Arshadi, S., “**1, 2, 4, 6-Cycloheptatetraenes racemizations: substituent effects *via ab initio***”, *Journal of Molecular Structure: THEOCHEM*, **2004**, *686* (1), 115-122.
223. Ghaemi, M.; Ghavami, R.; Khosravi-Fard, L.; **Kassaee, M.Z.**,” **Electrolytic MnO<sub>2</sub> *via* nonisothermal electrode heating: a promising approach for optimizing performances of electroactive materials**”, *Journal of Power Sources*, **2004**, *125* (2), 256-266.
224. Mahjoub, A. R.; Ghammami, S.; **Kassaee, M. Z.**, “**Tetramethylammonium fluorochromate (VI): A new and efficient oxidant for organic substrates**”, *Tetrahedron Letters*, **2003**, *44* (24), 4555-4557.
225. **Kassaee, M.Z.**; Bekhradnia, A.R., “**Role of the gut flora in toxicity and cancer: Role of the gut flora in toxicity and cancer**”, *Journal of Bioscience and Bioengineering*, **2003**, *95* (5), 526-529.
226. **Kassaee, M. Z.**; Bekhradnia, A. R., “**The kinetics of interactions between fecapentaene-12 and DNA**”, *Journal of Bioscience and Bioengineering*, **2003**, *95* (5), 526-529.
227. **Kassaee, M.Z.**; Haerizade, B.; Arshadi, S., “**Halogenated isomers of the interstellar C<sub>3</sub>H<sub>2</sub>: an *ab initio* comparative study**”, *Journal of Molecular Structure: THEOCHEM*, **2003**, *639* (1), 187-193.
228. **Kassaee, M.Z.**; Beigi, M.; Arshadi, S., “***Ab initio* investigations of structural and energetic properties of hindered aryl alkyl ketones**”, *Journal of Molecular Structure: THEOCHEM*, **2003**, *624* (1), 69-79.
229. Ghaemi, M.; Amrollahi, R.; Ataherian, F.; **Kassaee, M.Z.**, “**New advances on bipolar rechargeable alkaline manganese dioxide–zinc batteries**”, *Journal of Power Sources*, **2003**, *117* (1), 233-241.
230. **Kassaee, M.Z.**; Heydari, H.; Hattami, M.; Nia, “**A. F., <sup>13</sup>C Spin– Lattice Relaxation times and NOE related studies of hydroxyl-terminated polybutadiene (HTPB)**”, *Macromolecules*, **2003**, *36* (18), 6773-6779.
231. **Kassaee, M.Z.**; Arshadi, S.; Beigi, M., “***Ab initio* study of conformational energy surface of spiro [cyclohexane-1, 2'-(1', 3'-dioxep-5'-ene)]**”, *Journal of Molecular Structure: THEOCHEM*, **2002**, *589*, 153-159.
232. **Kassaee, M.Z.**; Nassari, M., “**The effects of substituents on the photochemistry of β-methylβ-nitrostyrene**”, *Journal of Photochemistry and Photobiology A: Chemistry*, **2000**, *136* (1-2), 41-48.
233. **Kassaee, M.Z.**; Nimlos, M.; Downie, K.; Waali, E., “**A mndo study of 3-,5-,7-and 9-membered carbocyclic, completely conjugated, planar carbenes and their nonplanar isomers**”, *Tetrahedron*, **1985**, *41* (8), 1579-1586.

## Patents

1. M.Z. Kassae\*, M. Ghavami, S.E. Motamedi., "Synthesis of nano-copper and nano-copper oxide *via* arc discharge in the open air", *Iranian Patent* 007689, **2006**, Tehran, Iran.
2. M. Z. Kassae\*, M. Ghavami, A. Cheshmekhani., "Synthesis of neuro-nano- nets (NNN) *via* arc discharge in the open air", *Iranian Patent* 005865, **2006**, Tehran, Iran
3. M. Z. Kassae\*, M. Ghavami, M. Majdi., "Synthesis of nano grape clusters of dihydroxy acetone dimmer", *Iranian Patent* 005252, **2006**, Tehran, Iran.
4. M. Z. Kassae\*, A. Mikhak, M. Faizian., "Synthesis of compound nano-zeolite fertilizer with nano-hydroxyapatite", *Iranian Patent* 100278, **2016**, Tehran, Iran.
5. M. Z. Kassae\*, A. Mikhak., "Recyclable nano Fe(OH)<sub>3</sub>/Zeolite in efficient phosphate removal from water", *Iranian Patent*100279, **2015**, Tehran, Iran.
6. Kassae, M. Z.; Ashenagar, S.; Shabani, I.; Mohamadi, M. **2018**, International Classification of Patent: A61K 67/8;A61K 00/8.

## Chemistry Courses Taught

### PhD level

- Advanced NMR
- Photochemistry
- Synthetic Methods in Organic Chemistry
- New Topics in Organic Chemistry (Nanotechnology; Computational Chemistry; Mas Advanced NMR Spectroscopy;
- Industrial Chemistry;
- Organic Reactive Intermediates

### MS level

- Advanced Organic Chemistry
- Molecular Spectroscopy I
- Organic Synthesis
- Petrochemicals and their Technology
- Petroleum Chemistry
- Physical Organic Chemistry



## BS level

- General Chemistry I & II
- Organic Chemistry I, II & III
- Polymer Chemistry

## Graduate students supervised

### Ph.D. Theses Supervised

1. "Capture of CO<sub>2</sub> by novel vinylidenes at theoretical levels", S. Soroudi, February **2023**, Tarbiat Modares University.
2. "Computational scrutiny on a few novel triplet silylenes", N. Soleimani Purlak, August **2022**, Tarbiat Modares University.
3. "Study on new plumblyenes and novel phenolic antioxidants at theoretical levels", N. Mohebi, January **2021**, Tarbiat Modares University.
4. "Experimental scrutiny and theoretical investigations on controversial "Vitamin B17 " plus a computational study on a new brand of cyclic conjugated germylene", S. Safaei, June **2021**, Tarbiat Modares University.
5. "Theoretical study of new silylenes", M. Ayoubi Chianeh, July **2020**, Tarbiat Modares University.
6. "A theoretical reach for unreachable germynes and synthesis of a nano-composite *via* [vitamin C / titanium dioxide / zinc oxide]", S. Ashenagar, June **2020**, Tarbiat Modares University.
7. "Novel diaminocarbenes, vinylidenes, phosphinidenes and reaction of selected carbenes with CO<sub>2</sub> by DFT", N. Khorshidvand, October **2019**, Tarbiat Modares University.
8. "Computational and experimental study of some cholesterol drugs and review of divalent group 14 element compounds", A.A. Ahmadi, April **2019**, Tarbiat Modares University.
9. "The effect of nano silicon dioxide and chitosan nanoparticles on some agronomic characteristics of wheat (*Triticum aestivum* L.) and barley (*Hordeum vulgare* L.) under late season drought stress", F. Behboudi, April **2018**, Tarbiat Modares University.
10. "Synthesis and catalytic applications of mesoporous silica nanoparticles in selected organic reactions", Z. Nasresfahani, September **2017**, Tarbiat Modares University.

11. "Synthesis of selected organo nanocomposites of silver and their applications in detergents, electric cables, and construction materials", M. Miranzadeh, July **2016**, Tarbiat Modares University.
12. "A theoretical quest for stable carbenes and experimental employment of nano ZnO synthesis, plus using a nano Ag complex in water treatment" B.N. Haerizade, December **2014**, Tarbiat Modares University.
13. "Synthesis and characterization of organic based nano catalyst and mass spectral distinction between chiral alcohols under achiral conditions", E. Eidy, August **2014**, Tarbiat Modares University.
14. "Synthesis of nano Fe<sub>3</sub>O<sub>4</sub> and TiO<sub>2</sub> and their catalytic applications in selected thermal and photochemical reactions", M. Ghavami, April **2014**, Tarbiat Modares University.
15. "Synthesis of metal oxide nanoparticles anchored by natural products as reusable catalysts in organic reactions", R. Mohammadi, September **2014**, Tarbiat Modares University.
16. "Synthesis of nano-metallic oxides and their application in the synthesis of selenides and polymer nanocomposites", E. Motamedi, September **2012**, Tarbiat Modares University.
17. "Theoretical studies on silylenes, cyclacenes and nanotubes of silicon", H. Zandi, March **2012**, Tarbiat Modares University.
18. "Investigation of metal oxide nano catalysts in synthesis of heterocyclic compounds", H. Masroui, June **2011**, Tarbiat Modares University.
19. "Synthesis of zinc oxide nanoparticles and its applications in multicomponent reactions", F. Movahedi, March **2011**, Tarbiat Modares University.
20. "A computational study on the structure and characteristics of carbenes and their catalytic action in organic reactions", M. Ghambarian, February **2011**, Tarbiat Modares University.
21. "Radiation synthesis of silver nanoparticles in organic stabilizers and their antibacterial activities", A. Akhavan, January **2010**, Tarbiat Modares University.
22. "Reaching for the characteristics of specific nano rings, nanoribbons and nanotubes *via* computations", H. ArefRad, February **2010**, Tarbiat Modares University.
23. "Arc discharge synthesis, characterization and application of metal nanoparticle and theoretical studies on nano rings and group 14 compounds", F. Buazar, October **2009**, Tarbiat Modares University.
24. "Study of selected organic reactive intermediate in groups 14&15 and synthesis of nano tungsten particles", S. Soleimani Amiri, February **2009**, Tarbiat Modares University.
25. "Computational studies on the selected carbenes and their heavier group 14 analogues", S.M. Musavi, September **2006**, Tarbiat Modares University.

26. "Study of reaction and photo-reaction of olefins, nitro olefins and the related theoretical computations", E. Vessally, September **2005**, Tarbiat Modares University.
27. "Investigation of the steric and electronic effects on the structural and energetic properties of selected organic compounds", S. Arshadi, January **2005**, Tarbiat Modares University.
28. "Syntheses and theoretical studies on the specific biological and pharmacological compounds", A. Bekhradnia, December **2005**, Tarbiat Modares University.
29. "Structural analysis and estimation of HTPB using PM3 calculations and comparing with experimental", M.H. Hosseinzadeh-Amir Khizi, June **1995**, Tarbiat Modares University.
30. "*ipso*-Nitration of selected aromatic compounds", M. Hashemi Talkhonche, **1995**, Tarbiat Modares University.

## M.S. Theses Supervised

1. "Application of enantiomerically blind electron impact mass spectroscopy in distinction between enantiomers and chemical education", A. Mojtahedi, March **2019**, Tarbiat Modares University.
2. "Comparison between steric effects on dithia carbenes, silylenes, germylenes, stanylenes and plumbenes at DFT", K. Rahmi, October **2019**, Tarbiat Modares University.
3. "Design and synthesis of new organocatalysts and their employment in selected organic reactions", A. Mousavi, **2018**, Tarbiat Modares University.
4. "Synthesis and applications of novel Cu(II) coated magnetic gum Arabic nanoparticles in coupling, oxidation, and multicomponent reactions", A. Farrokhi, September **2017**, Tarbiat Modares University.
5. "Synthesis and production of recyclable nano-adsorbants for purification of water", M.S. Doryab, March **2017**, Tarbiat Modares University.
6. "Preparation and Synthetic Applications of Selected Nanocatalysts over Organic-Inorganic Supports", M. Nejati Shendi, February **2017**, Tarbiat Modares University.
7. "Nanotechnology and conservation of stone monuments of the cultural heritage; (case study: pasargad and perspolis world heritage sites)", M. Haydari, **2017**, Tarbiat Modares University.

8. "Reaching for new N-heterocyclic carbenes and their interactions with carbon nanotubes", N. Rezaee, December **2015**, Tarbiat Modares University.
9. "Synthesis and characterization of magnetic chitosan nano-composites for removal of heavy metals and distinction between geometrical isomers *via* mass spectroscopy", M. Mirabedini, December **2014**, Tarbiat Modares University.
10. "Synthesis and characterization of organic based nano-catalyst and mass spectral distinction between chiral alcohols under achiral conditions", E. Eidi, September **2014**, Tarbiat Modares University.
11. "New perspectives at the interface of nano-organic chemistry and endodontics: Reaching for biocompatible and permeable irrigants", Sh. Hosseini, December **2014**, Tarbiat Modares University.
12. "Comparative Investigation of Dielectric Properties of Ethylene Propylene Rubber (EPR) Composites Containing Metallic, Ceramic Nanoparticles or their Combinations", M. Sadroddini, January **2014**, Tarbiat Modares University
13. "The effects of iron oxide nano particles on differentiation of mice mesenchymal stem cell to osteoblast", L. Dini, December **2013**, Azad University.
14. "Synthesis of graphenic nanocomposites and their comparison with Fe and Al nanoparticles in removing toxic arsenic from water", S. Poursadeghi, September **2013**, Tarbiat Modares University.
15. "Applications of aluminum nanoparticles and salts of gallium and aluminum in organic synthesis", M. Ghader, December **2012**, Tarbiat Modares University.
16. "The synthesis of modified nano silica catalysts by coordinated ligands with metals and their applications in organic synthesis", M. Mohadesi, March **2012**, Tarbiat Modares University.
17. "Effects of alfa substituents on stability and reactivity of acyclic, cyclic and cyclic unsaturated silylene", Z. Alsadate Najafi, January **2011**, Tarbiat Modares University.
18. "Nitrate decontamination using quartz supported Fe nanoparticles", A. Mikhak, March **2010**, Tarbiat Modares University.
19. "Syntheses and characterizations of silica based heterogeneous nano catalysts and their applications in specific multicomponent reactions", S. Amirnejat, March **2010**, Tarbiat Modares University.
20. "Synthesis of silver nanoparticles by chemical reduction method and the investigation of different effective parameters on the size and shape of nanoparticles", M. Mohammadkhani, June **2010**, Tarbiat Modares University.
21. "Investigation of catalytic effect of TiO<sub>2</sub> nanoparticles in condensation reactions", R. Mohammadi, March **2010**, Tarbiat Modares University.

22. "Synthesis of nano iron oxide and theoretical studies on the selected organic compounds " A. Cheshmehkani, Winter **2008**, Tarbiat Modares University.
23. "Synthesis of nickel nanoparticles and study on selected organic species ", M. Majdi, January **2008**, Tarbiat Modares University.
24. "Computational study of the steric effects on thiepin/benzene sulfide tautomerization and benzene-fused compounds", M.R. Momeni Tahri, September **2008**, Tarbiat Modares University.
25. "Computational study of the rear angements of silacyclohexadienylidenes to silabenzene and pridine-carbene tautomerization", F. AlipourShakib, September **2008**, Tarbiat Modares University.
26. "Synthesis of metallic nanoparticles and energy calculation of some organic compounds", M. Ghavami, February **2007**, Tarbiat Modares University.
27. "Synthesis of copper and copper oxide nanoparticles and theoretical studies on the selected organic compounds", E. Motamedi, Novmber **2007**, Tarbiat Modares University.
28. "Theoretical or experimental study on special organic species", N. Jalalimanesh, September **2006**, Tarbiat Modares University.
29. "Racemizations of cyclic conjugated non-planar allenes,  $C_9H_7X$ , through their corresponding cyclic planar carbenes", M. Koohi, February **2005**, Tarbiat Modares University.
30. "Quantum chemical studies on interstellar carbene homologues and solvent effect on HTPB dynamics", F. Buazar, September **2005**, Tarbiat Modares University.
31. "Theoretical studies on X-Ge-CN and Ge-CP germylenes (X = H, F, Cl and Br)", M. Ghambarian, December **2005**, Tarbiat Modares University.
32. "Investigation of the steric and electronic effects on some selected organic compounds", B.N. Haerizadeh, February **2004**, Tarbiat Modares University.
33. "Solvent effects on dynamics of HTPB and a new method for synthesis of oxidants", M. Hattami, May **2004**, Tarbiat Modares University.
34. "Synthesis of new oxidant for selective oxidation of alcohols to the corresponding aldehydes and ketones", H. Sajjadi-Ghotbabadi, February **2003**, Tarbiat Modares University.
35. "Synthesis of new oxidants for selective oxidation of organic compounds", S.Z. Sayyed Alangi, December **2003**, Tarbiat Modares University.
36. "Investigation of the steric effects on the structural and energetic properties of selected organic compounds", M. Beigi, October **2002**, Tarbiat Modares University.
37. "Synthesis of derivatives of furazan", I. Khsari, February **2001**, Tarbiat Modares University.
38. "Chemistry of FP-12 a potential (cause of colon cancer)", M. Sadeghi, August **1999**, Shahroud Azad University.

39. "Recovery and purification of glycerol from wastewater", A. Hadi, Winter **1998**, Tarbiat Modares University.
40. "The chemistry of FP-12 (A potential inducer of colon cancer)", M.J. Rezaov, Summer **1998**, Tarbiat Modares University.
41. "The study of HTPB degradation *via* NMR relaxation times  $T_1$  ( $^{13}\text{C}$ )", A. Fazli Nia, Winter **1998**, Tarbiat Modares University.
42. "The molecular structural relationship of FP-12 and related compounds to their ionic solvolysis *via* quantum chemical calculations", R. Nowrozy, Summer **1997**, Islamic Azad University, Shahrood branch.
43. "Quantum Chemical analysis of the free radical solvolysis of a possible inducer of colon cancer and related compounds", M. Amanbaee, Summer **1997**, Islamic Azad University, Shahrood branch.
44. "Analysis of industrial gases using GC/MS methods", M. Basam, Spring **1995**, Tarbiat Modares University.
45. "An NMR Relaxation study of PBD dynamics", H. Heydari, Fall **1995**, Tarbiat Modares University.
46. "Study of HTPB *via* NMR and computer", F. Goranlou, January **1995**, Tarbiat Modares University.
47. "*ipso*-Nitration of selected aromatics", M. Hashemi Talkhonche, January **1995**, Tarbiat Modares University.
48. "Separation and identification of components of jet fuel GC/MS and NMR", F. Gholamian, August **1994**, Tarbiat Modares University.
49. "Investigation the relationship between the servant leadership style with the willingness to empower employees", M. Naseri, October **1994**, Tarbiat Modares University.
50. "Separation and identification of aromatic hydrocarbons in petroleum fraction (100-200<sup>0c</sup>) of region No.3 of Maroon, Ahvaz", F. Salehi Rad, January **1989**, Tehran University.
51. "The analyses of aromatic components of petroleum (Maroon-3) by chromatography and NMR", F.A. Salhe-Rad, March **1988**, Tehran University.

## Seminars (Selected 245 papers)

1. Ahmadi, A.A.; **Kassaee, M.Z.**; Fatahi, A.R., "Planar stacking interactions in the binding of type II statins to HMG-COA reductase", **2018**, *20<sup>th</sup> Iranian Chemistry Congress*.
2. Khorshidvand, N.; Eidi, E.; **Kassaee, M.Z.**, "Synthesis and characterization of DCC supported on magnetic nanoparticles a highly active and recyclable catalyst for the synthesis of polyhydroquinolines", **2018**, *20<sup>th</sup> Iranian Chemistry Congress*.
3. Eidi, E.; **Kassaee, M.Z.**; Mousavi Mashhadi, S.A., "Magnetic niacin sulfonated a highly efficient and green catalyst for synthesis of alpha-aminonitrils under solvent- free conditions", **2018**, *1<sup>st</sup> Iranian Catalyst Conference (ICC)*.
4. Safaie, S.; **Kassaee, M.Z.**, "Factors affecting on the acidic site of prunasin in gas phase, water and DMSO", **2018**, *20<sup>th</sup> Iranian Chemistry Congress*.
5. Ayoubi, M.; **Kassaee, M.Z.**, "Computational study of polycyclic unsaturated silylenes and their allenic analogs", **2018**, *20<sup>th</sup> Iranian Chemistry Congress*.
6. Mohebbi, N.; **Kassaee, M.Z.**, "Substituent effects on thermodynamic parameters of new plumblylenes at DFT", **M.Z., 2018**, *20<sup>th</sup> Iranian Chemistry Congress*.
7. Khorshidvand, N.; **Kassaee, M.Z.**, "Electronic effects on normal and abnormal acyclic cyclic-saturated and cyclic-unsaturated diaminocarbenes at DFT", **2018**, *20<sup>th</sup> Iranian Chemistry Congress*.
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## Translations

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## Book

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## Research interests

1. Computational chemistry of carbenes, silylenes and germylenes.
2. Solar energy storage norbornadiene quadricyclane systems.
3. Photochemistry of nitro-nitrite rearrangements.
4. Petroleum chemistry.
5. Nano-chemistry.
6. Industrial and food chemistry.
7. Polymer chemistry: NMR dynamic models.
8. Colon cancer research: FP-12 interactions with DNA.

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