



# محمدزمان کسائی

استاد شیمی آلبوم

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## چکیده:

انگیزه خدمت و علاقه شدید به حل مسایل ارجاعی از طرق روش‌های تجربی و محاسباتی از شاخصه‌های گروه تحقیقاتی ماست. مهمترین وجه تمایز ما با سایر گروه‌های تحقیقاتی پدیده ذهنیت پویا (growth mindset) است که ریشه در تحصیلات بین رشته‌ای اینجانب دارد که شامل: کارشناسی (۱-زمیست، ۲-علوم پزشکی مقدماتی); کارشناسی ارشد (فتوشیمی); دکتری (شیمی حدواسطه‌های آلبوم فعال) و پسادکتری (شیمی سرطان). این پدیده در زمینه آموزشی باعث تدریس حدود ۲۰ درس متنوع در مقاطع کارشناسی، کارشناسی ارشد و دکتری شده است. در زمینه پژوهشی حدود ۲۰۰ مقاله علمی در بیش از ۷۰ نشریه متنوع ISI چاپ کرده ایم و بیش از ۳۰۰ سمینار علمی در مجامع بین‌المللی ارایه کرده ایم و حدود ۱۰ ثبت اختراع و ۳ مورد ترجمه چاپ کرده و یک کتاب تالیف نموده ایم. همچنین پایان نامه ۳۰ دانشجوی دکتری و ۵۰ دانشجوی کارشناسی ارشد را راهنمایی کرده و یک پژوهشگر فرادکتری را هدایت نموده ایم. مضافاً فعالیت‌های صنعتی مختلف داشته ایم. زمینه‌های فعالیت‌های بین رشته‌ای فوق الذکر شامل: نانو شیمی، فتوشیمی، شیمی نفت، پتروشیمی، شیمی سرطان، پلیمر و اسپکتروسکوپی است.

## تحصیلات دانشگاهی

پسا دکتری در زمینه سنتز نمونه رادیواکتیو عامل احتمالی سرطان روده بزرگ

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

دانشگاه پلی تکنیک ویرجینیا، بلکس برگ، ویرجینیا، آمریکا

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

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

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دکتری در زمینه حدواسط های فعال شیمی آلی شامل سنتز و محاسبات کوانتومی کاربن های  $C_9H_8$

PhD in Organic Chemistry (Reactive Intermediates)

"Generation and characterization of conjugated monocyclic  $C_9H_8$  carbenes"

دانشگاه مانتانا، میسولا، مانتانا، آمریکا

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

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کارشناسی ارشد در زمینه فتوشیمی استایرن و مشتقان آن

## MS in Organic Photochemistry

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

دانشگاه وسترن کنتاکی، بولینگ گرین، کنتاکی، آمریکا

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

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کارشناسی در رشته های زیست و پزشکی مقدماتی

## BS in Biology and Premedical Sciences

دانشگاه اورگان، یوجین، اورگان، آمریکا

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

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مقالات انتخابی منتشر شده (۲۱۹ عدد) در نشریات علمی

## Scientific Publications

1. Ahmadi, A.A.; Kassaee, 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, e4126.
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3. Abedini, N.; Kassaee, M.Z., "Substitution effects on novel bicyclo[2.2.1]hepta-7-silylenes by DFT", *Journal of Molecular Modeling*, 2021, 27, 1-13.

4. Abedini, N.; **Kassaee, M.Z.**, "A quest for stable bicyclic carbenes with one, two, and three carbonic centers at theoretical level", *Structural Chemistry*, **2021**, 32, 1105–1112.
5. Ayoubi-Chiane, M.; Kassaee, M.Z., "Stable four-membered cyclosilylenes at theoretical levels", *Journal of the Chinese Chemical Society*, **2021**, 68, 541-550.
6. Eidi, E.; Kassaee, 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", *Springer*, **2021**, 152, 461-468.
7. **Abedini, N.**; Kassaee, M.Z., "Estimating the stability and reactivity of novel bicyclic germylenes at density functional theory", *Journal of Physical Organic Chemistry*, **2021**, [doi.org/10.1002/poc.4208](https://doi.org/10.1002/poc.4208).
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11. Soleimani Purlak, N.; **Kassaee, M.Z.**, "New N-heterocyclic mono- and disilavinylidene iron–complexes by density functional theory", *Journal of Physical Organic Chemistry*, **2021**, 34, e4148.
12. Soleimani Purlak, N.; **Kassaee, 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, e4053.
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14. Ayoubi-Chiane, M.; **Kassaee, M.Z.**, "Novel halogenated cyclopentasilylene-2,4-dienes via DFT", *Journal of the Chinese Chemical Society*, **2020**, 67, 692-702.
15. Abedini, N.; **Kassaee, M.Z.**, "A theoretical investigation into novel germylenes: Effects of nitrogen substitution on stability and multiplicity", *Journal of Molecular Modeling*, **2020**, 26, 1-11.

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## Patents

## ثبت اختراع

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2. M. Z. Kassaee\*, 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. Kassaee\*, M. Ghavami, M. Majdi., "Synthesis of nano grape clusters of dihydroxy acetone dimmer", *Iranian Patent 005252*, **2006**, Tehran, Iran.
4. M. Z. Kassaee\*, A. Mikhak, M. Faizian., "Synthesis of compound nano-zeolite fertilizer with nano-hydroxyapatite", *Iranian Patent 100278*, **2016**, Tehran, Iran.
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## عناوین دروس تدریس شده در مقطع دکتری

- Advanced NMR
- Photochemistry
- Synthetic Methods in Organic Chemistry

- New Topics in Organic Chemistry (Nanochemistry; Computational Chemistry; Mas Advanced NMR Spectroscopy;
- Industrial Chemistry;
- Organic Reactive Intermediates

### عنوانیں دروس تدریس شدہ در مقطع کارشناسی ارشد

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

### عنوانیں دروس تدریس شدہ در مقطع کارشناسی

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

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### رسالہ های راہنمایی شدہ دانشجویان دورہ دکتری

#### Ph.D. Theses Supervised

1. "Theoretical study of new silylenes", M. Ayoubi Chiane, July **2020**, Tarbiat Modares University.
2. "Theoretical reach for unreachable germylenes and synthesis of a nano-composite via [Vitamin C / Titanium dioxide / Zinc oxide]", S. Ashenagar, June **2020**, Tarbiat Modares University.
3. "Novel diaminocarbenes, vinylidenes, phosphinidenes and reaction of selected carbenes with CO<sub>2</sub> by DFT", N. Khorshidvand, October **2019**, Tarbiat Modares University.
4. "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.
5. "Synthesis and catalytic applications of mesoporous silica nanoparticles in selected organic reactions", Z. Nasresfahani, September **2017**, Tarbiat Modares University.

6. "Synthesis of selected oregano nanocomposites of silver and their applications in detergents, electric cables, and construction materials", M. Miranzadeh, July **2016**, Tarbiat Modares University.
7. "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.
8. "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.
9. "Synthesis of metal oxide nanoparticles anchored by natural products as reusable catalysts in organic reactions", R. Mohammadi, September **2014**, Tarbiat Modares University.
10. "Synthesis of nano-metalic oxides and their application in the synthesis of selenides and polymer nanocomposites", E. Motamedi, September **2012**, Tarbiat Modares University.
11. "Theoretical studies on silylenes, cyclacenes and nanotubes of silicon", H. Zandi, March **2012**, Tarbiat Modares University.
12. "Investigation of metal oxide nano catalysts in synthesis of heterocyclic compounds", H. Masrouri, June **2011**, Tarbiat Modares University.
13. "Synthesis of zinc oxide nanoparticles and its applications in multicomponent reactions", F. Movahedi, March **2011**, Tarbiat Modares University.
14. "A computational study on the structure and characteristics of carbenes and their catalytic action in organic reactions", M. Ghambarian, February **2011**, Tarbiat Modares University.
15. "Gamma ray fabrications of nano gold and nano silver and their biological applications", A. Akhavan, January **2010**, Tarbiat Modares University.
16. "Reaching for the characteristics of specific nano rings, nanoribbons and nanotubes *via* computations", H. ArefRad, February **2010**, Tarbiat Modares University.
17. "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.
18. "Study of selected organic reactive intermediate in groups 14&15 and synthesis of nano tungestan particles", S. Soleimani Amiri, February **2009**, Tarbiat Modares University.
19. "Computational studies on the selected carbenes and their heaver group 14 analogues", S.M. Musavi, September **2006**, Tarbiat Modares University.
20. "Study of reaction and photo-reaction of olefins, nitro olefins and the related theoretical computations", E. Vessally, September **2005**, Tarbiat Modares University.
21. "Investigation of the steric and electronic effects on the structural and energetic properties of selected organic compounds", S. Arshadi, January **2005**, Tarbiat Modares University.

22. "Syntheses and theoretical studies on the specific biological and pharmacological compounds", A. Bekhradnia, December **2005**, Tarbiat Modares University.
23. "Structural analysis and estimation of HTPB using PM3 calculations and comparing with experimental", M.H. Hosseinzadeh-Amir Khizi, June **1995**, Tarbiat Modares University.
24. "*ipso*-Nitration of selected aromatic compounds", M. Hashemi Talkhonche, **1995**, Tarbiat Modares University.

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## رساله های راهنمایی شده دانشجویان دوره کارشناسی ارشد

### M.S. Theses Supervised

1. "Application of enatiomerically blind electron impact mass spectroscopy in distinction between enantiomers and chemical education", A. Mojtabaei, 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. "Preparation and synthetic applications of selected nano-catalysts over organic-inorganic ma
5. "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.
6. "Synthesis and production of recyclable nano-adsorbants for purification of water", M. S. Doryab, March **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 quarts 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. "Syntheesis 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", 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 arrangements 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. Motamed, November **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<sub>9</sub>H<sub>7</sub>X, 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. Ghambaryan, 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. Kahsari, February **2001**, Tarbiat Modares University.
38. "Chemistry of FP-12 a potential (cause of colon cancer)", M. Sadeghi, August **1999**, Shahrood 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<sub>1</sub> (<sup>13</sup>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. "Analysis of industrial gases by GC/MS", M. Basam, January **1995**, Tarbiat Modares University.
48. "*ipso*-Nitration of selected aromatics", M. Hashemi Talkhonche, January **1995**, Tarbiat Modares University.
49. "Separation and identification of components of jet fuel GC/MS and NMR", F. Gholamian, August **1994**, Tarbiat Modares University.
50. "Investigation the relationship between the servant leadership style with the willingness to empower employees", M. Naseri, October **1994**, Tarbiat Modares University.
51. "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.
52. "The analyses of aromatic components of petroleum (Maroon-3) by chromatography and NMR", F.A. Salhe-Rad, March **1988**, Tehran University.

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## Seminars

## مقالات ارائه شده در همایش های علمی

1. "Planar stacking interactions in the binding of type II statins to HMG-COA reductase", Ahmadi, A.A.; **Kassaei, M.Z.**; Fatahi, A.R., **20<sup>th</sup> Iranian Chemistry Congress**.
2. "Synthesis and characterization of DCC supported on magnetic nanoparticles a highly active and recyclable catalyst for the synthesis of polyhydroquinolines", Khorshidvand, N.; Eidi, E.; **Kassaei, M.Z.**, **20<sup>th</sup> Iranian Chemistry Congress**.

3. "Magnetic niacin sulfonated a highly efficient and green catalyst for synthesis of alpha-aminonitrils under solvent- free conditions", Eidi, E.; **Kassaee, M.Z.**; Mousavi Mashhadi, S.A., **2018, 1<sup>st</sup> Iranian Catalyst Conference (ICC)**.
4. "Factors affecting on the acidic site of prunasin in gas phase, water and DMSO", Safaie, S.; **Kassaee, M.Z.**, **2018, 20<sup>th</sup> Iranian Chemistry Congress**.
5. "Computational study of polycyclic unsaturated silylenes and their allenic analogs", Ayoubi, M.; **Kassaee, M.Z.**, **2018, 20<sup>th</sup> Iranian Chemistry Congress**.
6. "Substituent effects on thermodynamic parameters of new plumbbylenes at DFT", Mohebbi, N.; **Kassaee, M.Z.**, **2018, 20<sup>th</sup> Iranian Chemistry Congress**.
7. "Electronic effects on normal and abnormal acyclic cyclic-saturated and cyclic-unsaturated diaminocarbenes at DFT", Khorshidvand, N.; **Kassaee, M.Z.**, **2018, 20<sup>th</sup> Iranian Chemistry Congress**.
8. "Ionic liquid functionalized mesoporous silica nanoparticles (pmimFeCl<sub>4</sub>/MSNs) efficient nanocatalyst for solventfree synthesis of NN-diarylsubstituted formamidines", Nasreesfehani, Z.; **Kassaee, M.Z.**; Eidi, E., **2018, 20<sup>th</sup> Iranian Chemistry Congress**.
9. "Synthesis of quinazolines over recyclable Fe<sub>3</sub>O<sub>4</sub>SiO<sub>2</sub>-APTES-Fe<sub>3</sub> nanoparticles a green efficient and solvent-free protocol", Eidi, E.; **Kassaee, M.Z.**, **2018, 20<sup>th</sup> Iranian Chemistry Congress**.
10. "N-heterocyclic germylenes in focus", **Kassaee, M.Z.**; Rahmati, S., **2018, 20<sup>th</sup> Iranian Chemistry Congress**.
11. "Usage of chitosan nanoparticles for improvement of barley Yield under drought stress", Behboody, F.; Sarvestany, Z.; **Kassaee, M.Z.**; Modares, A.M.; Sorouhzadeh, A., **2017, 6<sup>th</sup> International Conference on Ultra-fine Grained and Nano-Structured Materials**.
12. "Phytotoxicity of chitosan and SiO<sub>2</sub> nanoparticles to seed germination of wheat (*Triticum Aestivum L.*) and barley (*Hordeum Vulgare L.*) plants", Behboudy, F.; Tahmasbisarvestani, Z.; **Kassaee, M.Z.**; Modaressanavi, S.A.M.; Sorouhzade, A., **2017, Notulae Scientia Biologicae**.
13. "Novel magnetic chitosan hydrogel film cross-linked with glyoxal as an efficient adsorbent for removal of toxic Cr (VI) from water", Mirabedini, M.S.; **Kassaee, M.Z.**; Poorsadeghi, S., **2017, ARABIAN JOURNAL FOR SCIENCE AND ENGINEERING**.
14. "Steric effects on acyclic diaminocarbenes vs. their abnormal cyclic saturated and unsaturated analogues at DFT", **Kassaee, M.Z.**; Khorshidvand, N., **2017, National Congress on Chemistry and Nano-Chemistry from Research to Naional Development**.
15. "Cu- immobilized mesoporous silica nanoparticles Cu<sub>2</sub>MSNs-(CO<sub>2</sub>)<sub>2</sub> as an efficient nanocatalyst for one-pot synthesis of pyrazolopyranopyrimidines in water", Nasr-e Esfehani, Z., **Kassaee, M.Z.**, **2017, The 25<sup>th</sup> Iranian Seminar of Organic Chemistry**.
16. "Electronic effects on normal vs abnormal Tetrazol-5-ylidenes at DFT", **Kassaee, M.Z.**; Khorshidvand, N., **2017, The 25<sup>th</sup> Iranian Seminar of Organic Chemistry**.

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