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Research area:

1. Heterogeneous Catalysis (Preparation, characterization and application of metal oxide nanoparticles in different oxidation reactions under gas phase and in the solution).
2. Metal – ligand interaction studies (Complexation).

Publications:

1. Correlation of Electrical Properties and Performance of OCM $\text{MO}_x/\text{Na}_2\text{WO}_4/\text{SiO}_2$ Catalysts; **A. Malekzadeh**, A. Khodadadi, M. Abedini, M. Amini, A. Bahramian and A. K. Dalai; *Catal. Commun.* 2 (2001) 241.
2. Critical Influence of Mn over Low Temperature Catalytic Activity of $\text{Mn}/\text{Na}_2\text{WO}_4/\text{SiO}_2$ Catalyst for Oxidative Coupling of Methane; **A. Malekzadeh**, A. Khodadadi, M. Abedini, M. Amini, H. K. Mishra and A. K. Dalai; *Catal. Lett.* 84 (2002) 45.
3. Oxidative Coupling of Methane in a Negative DC Corona Reactor at Low Temperature; F. Bagheri-Tar, A. Khodadadi, **A. Malekzadeh** and S. S. Mohajezadeh; *Canadian Journal of Chemical Engineering*; 81 (1) (2003) 37.
4. Oxidative Coupling of Methane over Lithium Doped $(\text{Mn}+\text{W})/\text{SiO}_2$ Catalysts; **A. Malekzadeh**, A. Khodadadi, A. K. Dalai, M. Abedini; *J. Natural Gas Chemistry* 16 (2007) 121.
5. Structural Features of $\text{Na}_2\text{WO}_4\text{-MO}_x/\text{SiO}_2$ Catalysts in Oxidative Coupling of Methane Reaction; **A. Malekzadeh**, A. K Dalai, A. Khodadadi, Y. Mortazavi; *Catal. Commu.* 9 (2008) 960.
6. Effects of Excess Cobalt Oxide Nanocrystallites on LaCoO_3 Catalyst on Lowering the Light off Temperature of CO and Hydrocarbons Oxidation; L. Abadian, **A. Malekzadeh**, A. Khodadadi, Y. Mortazavi; *Iran. J. Chem. Chem. Eng.* 27 (2008) 71.
7. Oxidative coupling of methane over $(\text{Na}_2\text{WO}_4+\text{Mn}$ or $\text{Ce})/\text{SiO}_2$ catalysts: In situ measurement of electrical conductivity; Zeinab Gholipour, **Azim Malekzadeh**, Reza Hatami, Yadollah Mortazavi, Abasali Khodadadi; *J. Natural Gas Chemistry* 19 (2010) 35.

8. Effect of citric acid concentration as emulsifier on perovskite phase formation of nano-sized SrMnO₃ and SrCoO₃ samples; M. Khazaei, **A. Malekzadeh**, F. Amini, Y. Mortazavi, and A. Khodadadi; *Cryst. Res. Technol.* 45 (10) (2010) 1064.
9. Kinetic study of oxidative coupling of methane over Mn and/or W promoted Na₂SO₄/SiO₂ catalysts; M. Ghiasi, **A. Malekzadeh**, S. Hoseini, Y. Mortazavi, A. Khodadadi, A. Talebizadeh; *J. Natural Gas Chemistry* 20 (2011) 428.
10. Synthesis of CaCO₃ nanoparticles via citrate method and sequential preparation of CaO and Ca(OH)₂ nanoparticles; M. Ghiasi and **A. Malekzadeh**; *Cryst. Res. Technol.* 47 (4) (2012) 471.
11. Synthesis of thoria nanoparticles via the hydrothermal method in supercritical condition; M. Moeini, **A. Malekzadeh**, S. J. Ahmadi, M. Hosseinpour; *Materials Letters* 81 (2012) 99.
12. Effect of partial substitution of lanthanum by strontium or bismuth on structural features of the lanthanum manganite nanoparticles as a catalyst for carbon monoxide oxidation; Ehsan Frozandeh-Mehr, **Azim Malekzadeh**, Mahnaz Ghiasi, Ahmad Gholizadeh, Yadollah Mortazavi, Abbasali Khodadadi; *Catalysis Communications* 28 (2012) 32.
13. Preparation and Characterization of Tetragonal Zirconium Oxide Nanocrystals from Isophthalic Acid-Zirconium(IV) Nanocomposite As a New Precursor; M. Ranjbar, M. Yousefi, M. Lahooti, **A. Malekzadeh**; *Int. J. Nanosci. Nanotechnol.* 8 (4) (2012) 191.
14. Manganese Oxide Promoted LaCoO₃ Nano-Perovskite for Oxidation of a Model Exhaust Gas; S. Farhanian Moghadam, **A. Malekzadeh**, M. Ghiasi, F. Karimi, Y. Mortazavi, A. Khodadadi; *Iranian Journal of Chemical Engineering* 9 (2) (2012) 22.
15. Structural flexibility under oxidative coupling of methane; main chemical role of alkali ion in [Mn+(Li, Na, K or Cs)+W]/SiO₂ catalysts; Z. Gholipour, **A. Malekzadeh**, M. Ghiasi, Y. Mortazavi and A. Khodadadi; *Iranian Journal of Science & Technology* (2012) A2: 189-211; (2012) A2: 189.
16. Effect of citric acid and starch as emulsifier on phase formation and crystallite size of lanthanum oxide nanoparticles; Hamidreza Bojari, **Azim Malekzadeh**, Mahnaz Ghiasi, Ahmad Gholizadeh, Ramin Azargohar, and Ajay Kumar Dalai; *Cryst. Res. Technol.* 48 (6) (2013) 355.
17. Moderate concentration of citric acid for the formation of LaMnO₃ and LaCoO₃ nano-perovskites; Elham Ghiasi, **Azim Malekzadeh**, Mahnaz Ghiasi; *J. RARE EARTHS*, 31 (10) (2013) 997.
18. Facile Synthesis and Characterization of Monocrystalline Cubic ZrO_{2.12} Nanoparticles; Hamidreza Bojari, **Azim Malekzadeh**, Mahnaz Ghiasi, *J. Clust. Sci.* 25 (2014) 387.
19. Structural Features of (Ce, La or Sr)(Mn or Co)O₃ NanoPerovskites as a Catalyst for Carbon Monoxide Oxidation; Mahnaz Ghiasi, **Azim Malekzadeh**; *Acta Metall. Sin. (Engl. Lett.)* 27(4) (2014) 635.
20. Sonochemical synthesis and characterization of nano-sized zirconium(IV) complex: new precursor for the preparation of pure monoclinic and tetragonal zirconia nanoparticles; Maryam Ranjbar, Mahboobe Lahooti, Mostafa Yousefi, **Azim Malekzadeh**; *J IRAN CHEM SOC* 11 (2014) 1257.

21. Solar photocatalytic degradation of methyl orange over $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ nano-perovskite; Mahnaz Ghiasi, **Azim Malekzadeh**; *Separation and Purification Technology* 134 (2014) 12.
22. Structural and Redox Properties of the $\text{La}_{(1-x)}\text{Sr}_x\text{Mn}_{0.5}\text{Co}_{0.5}\text{O}_3$ ($x = 0.0, 0.1, 0.2, 0.3, 0.4, 0.5$) Nano-Catalysts for Carbon Monoxide Oxidation; M. Lotfi, A. Gholizadeh, **A. Malekzadeh**; *Journal of Advanced Materials and Processing* 2 (4) (2014) 65-70.
23. Synthesis, characterization and photocatalytic properties of lanthanum oxy-carbonate, lanthanum oxide and lanthanum hydroxide nanoparticles; Mahnaz Ghiasi, **Azim Malekzadeh**; *Superlattices and Microstructures* 77 (2015) 295.
24. Comparative study of oxidation of benzyl alcohol: Influence of Cu-doped metal cation on nano ZnO catalytic activity; Mehdi Forouzani, Hamid Reza Mardani, Mitra Ziari, **Azim Malekzadeh**, Pouria Biparva; *Chemical Engineering Journal* 275 (2015) 220.
25. Synthesis and optical properties of cubic Co_3O_4 nanoparticles via thermal treatment of a trinuclearcobalt complex; Mahnaz Ghiasi, **Azim Malekzadeh**, Hamidreza Mardani; *Materials Science in Semiconductor Processing* 42 (2016) 311.
26. Mn and Co Charge and Spin Evolutions in $\text{LaMn}_{1-x}\text{Co}_x\text{O}_3$ Nanoparticles; Mahnaz Ghiasi, Mario Ulises Delgado-Jaime, **Azim Malekzadeh**, Ru-Pan Wang, Piter S. Miedema, Martin Beye, and Frank M. F. de Groot; *J. Phys. Chem. C* 120 (2016) 8167.
27. Calcium and strontium substituted lanthanum manganite-cobaltite $\text{La}_{1-x}(\text{Ca,Sr})_x\text{Mn}_{0.5}\text{Co}_{0.5}\text{O}_3$ nano-catalysts for low temperature CO oxidation; Ahmad Gholizadeh, Hamid Yousefi, **Azim Malekzadeh**, Faiz Pourarian; *Ceramics International* 42 (10) (2016) 12055-12063.
28. Structural and magnetic features of $\text{La}_{0.7}\text{Sr}_{0.3}\text{Mn}_{(1-x)}\text{Co}_x\text{O}_3$ nano-catalysts for ethane combustion and CO oxidation; Ahmad Gholizadeh, **Azim Malekzadeh**, Mahnaz Ghiasi; *Ceramics International* 42 (5) (2016) 5707-5717.
29. Structural and redox features of $\text{La}_{0.7}\text{Bi}_{0.3}\text{Mn}_{(1-x)}\text{Co}_x\text{O}_3$ nanoperovskites for ethane combustion and CO oxidation; Ahmad Gholizadeh, **Azim Malekzadeh**, *International Journal of Applied Ceramic Technology* 14 (3) (2017) 404-412.
30. Study of structural and catalytic properties of Ni catalysts prepared from inorganic complex precursor for Fischer-Tropsch synthesis; Sania Saheli, Ali Reza Rezvani, **Azim Malekzadeh**; *J. Molecular Structure* 1144 (2017) 166.

Conferences:

1. Intermetallic Interactions in Mn and/or W doped $\text{Li}_2\text{SO}_4/\text{SiO}_2$ Catalysts for Oxidative Coupling of Methane; **A. Malekzadeh**, A. Khodadadi, M. Abedini, M. Amini, H. K. Mishra and A. K. Dalai; The 17th Symposium of Catalysis, 1-5 Jun 2002, Vanquer, Canada, Oral Presentation.
2. C_2 Hydrocarbons Formation During the Oxidative Coupling of Methane in the Cold Plasma; E. Raji, A. Khodadadi, S. Mohajerzadeh, Y. Mortazavi, **A. Malekzadeh** and M. Hajitarverdi; The 8th Iranian International Chemical Engineering Conference, 20-23 October 2003, Mashhad, Iran, Oral Presentation.
3. Oxidation activity enhancement of LaCoO_3 prepared by combustion synthesis method; F. Tousi, A. Khodadadi, Y. Mortazavi, A. Badieli and **A. Malekzadeh**; 5th World Congress on Oxidation Catalysis, 25-30 September, 2005, Sapporo, Japan.
4. Critical effect of excess cobalt on lowering oxidation temperature of exhaust pollutant gases on non-stoichiometric $\text{LaCo}_{1.3}\text{O}_{3+\delta}$; L. Abadian, **A. Malekzadeh**, Y. Mortazavi and A. Khodadadi; 5th World Congress on Oxidation Catalysis, 25-30 September, 2005, Sapporo, Japan.
5. Application of supported gold nanocatalyst in removing pollutants from the automobile exhaust gas at low temperatures; M. Hosseini, A. Khodadadi, Y. Mortazavi, **A. Malekzadeh**; First International Congress on Nanoscience and Nanotechnology, Faculty of Engineering, University of Tehran, 18-20 December 2006.
6. اثر جانیشینی جزئی La با Sr بر روی خواص کاتالیستی LaCoO_3 در اکسیداسیون CO گاز آگروز؛ لیلا آبادیان، بهنام بهرامی، عباسعلی خدادادی، یدا... مرتضوی، **عظیم ملک زاده**، مهدی شراوند و سهیلا پورامین؛ یازدهمین کنگره ملی مهندسی شیمی ایران، دانشگاه تربیت مدرس، ۷-۹ آذر ۱۳۸۵، تهران، ایران.
7. سریا، فعال کننده مناسب اکسیژن در واکنش جفت شدن اکسایشی متان توسط کاتالیست $\text{CeO}_2/\text{Na}_2\text{WO}_4/\text{SiO}_2$ ؛ رضا حاتمی، **عظیم ملک زاده**، عباسعلی خدادادی، یدا... مرتضوی؛ یازدهمین کنگره ملی مهندسی شیمی ایران، دانشگاه تربیت مدرس، ۷-۹ آذر ۱۳۸۵، تهران، ایران.
8. A General Method to Find the Splitting Pattern of the Atomic Orbitals under potential of Charges Using MATLAB; Z. Gholipour and **A. Malekzadeh**; The 2th Conference and Workshop on Mathematical Chemistry (SCWMC); April 14-16, 2009, Kashan University, Kashan, Iran.
9. Effects of Manganese substituted Lithium or Magnesium of SrMnO_3 perovskite on Light off Temperature of CO and Hydrocarbon Oxidation; Fatemeh Amini, **Azim Malekzadeh**, Abasali Khodadadi, Yadollah Mortazavi; The 6th International Chemical Engineering Congress and Exhibition (ICHEC 2009); 16-20 November 2009; Kish Island, I. R. Iran.

10. Chemical Role of Alkali Ion by In Situ Electrical Conductivity–Catalytic Performance Studies of (Mn+A+W)/SiO₂ Catalysts for Oxidative Coupling of Methane Reaction; Z. Gholipour, **A. Malekzadeh**, A. Khodadadi, Y. Mortazavi; The 6th International Chemical Engineering Congress and Exhibition (IChEC 2009); 16-20 November 2009; Kish Island, I. R. Iran.

11. Effect of Manganese Oxide Addition on Structural and Redox Property of LaCoO₃ Perovskite; S. F. Moghadam, **A. Malekzadeh**, A. Khodadadi, Y. Mortazavi; The 6th International Chemical Engineering Congress and Exhibition (IChEC 2009); 16-20 November 2009; Kish Island, I. R. Iran.

12. Effects of Ceria addition on the structural properties of LaCoO₃ perovskite; F. Karimi, **A. Malekzadeh**, A. Khodadadi, Y. Mortazavi; The 6th International Chemical Engineering Congress and Exhibition (IChEC 2009); 16-20 November 2009; Kish Island, I. R. Iran.

13. Estimating kinetic parameters of the oxidative coupling of methane over (4%Mn+0.1%Na+3.13%W)/SiO₂ catalyst by using the genetic algorithm (GA); M Ghiasi and **A. Malekzadeh**; The Third Conference and Workshop on Mathematical Chemistry (TCWMC 2010); 22-24 February 2010, Tarbiat Modares University, Tehran, I. R. Iran.

۱۴. تاثیر مقدار اسید سیتریک به عنوان امولسیون کننده بر تشکیل فاز پروسکایت SrMnO₃ به عنوان نانوکاتالیست اکسایش CO و هیدروکربن‌ها؛ مریم خزایی، **عظیم ملک زاده**، فاطمه امینی علویجه، عباسعلی خدادادی، یدالله مرتضوی؛ اولین همایش منطقه‌ای آخرین دستاوردهای تحقیقاتی شیمی و نانوتکنولوژی؛ ۶ اسفند ۱۳۸۸؛ دانشگاه آزاد اسلامی واحد درود.

۱۵. بررسی نقش پایه کوارتز طبیعی بر فعالیت کاتالیست (۴%Mn+۵%Na_۲WO_۴)/NQ در واکنش زوج شدن اکسایشی متان؛ وجیهه ترابی، **عظیم ملک زاده**، عباسعلی خدادادی، یدالله مرتضوی؛ اولین همایش منطقه‌ای آخرین دستاوردهای تحقیقاتی شیمی و نانوتکنولوژی؛ ۶ اسفند ۱۳۸۸؛ دانشگاه آزاد اسلامی واحد درود.