

## Dr Abdussalam K. Qaroush

### Assistant Professor-Organic Chemistry

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National Researcher Number: 12426



### Activity Profile

- (12/03/2018- Up to now) **Assistant Professor**, Chemistry Department, The University of Jordan (UJ).
- (29/01/2017- 11/03/2018), Lecturer, Chemistry Department, The University of Jordan (UJ).
- (14/02-1/09/2016). Part-time lecturer, German Jordanian University (GJU).
- (1/08/2015-Up to now). *Visiting Assistant Researcher*, Chemistry Department, TUM (JoSTA Initiative)  
One of 30 Jordanian scientists and technologists abroad (JoSTA, a national priority set by the premiership) that was initiated in August, 2015. The call was organized by the Jordanian Higher council of Science and Technology (HCST). Technology transfer upon working with Jordanian peers is a must to ensure CO<sub>2</sub>-based end product(s) in the local market.  
**(Top 100 Universities, 64 QS ranking (2018), 50 Shanghai ranking (2017)).**
- (12/08/2015-31/07/2014). *Researcher*, Chemistry Department, TUM.
- (01/07/2009-11/08/2014). *PhD Candidate* (Fellowship), Chemistry Department, TUM, Germany.
- (03/08/ 2008 – 30/06/2009). *Chemistry Tutor*, Islamic Educational College (IGCSE-GCE System).
- (09/09/2007 – 02/08/ 2008). *Teaching Assistant*, Chemistry Department, Hashemite University.
- (18/05/2007 – 08/09/2007). *Research Assistant*, Chemistry Department, Hashemite University.
- (01/09/2004-/17/05/2007). M. Sc. in Chemistry (Fellowship).
- (01/10/2000-30/06/2004). B. Sc. in Chemistry.

### Education

- **PhD in Macromolecular Chemistry (2009-2014) (Supervised by: Prof. Dr. Bernhard Rieger)**

#### **Technische Universität München (TUM), Munich, Germany.**

PhD candidate: Dissertation topic "CO<sub>2</sub> Activation Using Nitrogen Bearing Donors: Capturing of CO<sub>2</sub> using [n]-oligoureas as Novel Green Sorbents". It deals with different approaches to capture CO<sub>2</sub> by task-specific ionic liquids (TSILs) and their polymeric correspondents (PILs), as well as a newly invented material, *viz.* [n]-oligoureas, as solid sorbents, using propylene carbonate as a green carbonylating agent.

- **Master of Science, Chemistry (2004-2007) (Supervised by Prof. Dr. Adnan Abu-Surrah)**

#### **Hashemite University, Zarqa, Jordan.**

M Sc. Chemistry: Thesis entitled "Synthesis and Characterization of Some Iron(II) and Cobalt(II) Complexes Containing 2,6-Bis(imino)pyridine- and Salen-based Tridentate Ligands: Evaluation of the Complexes as Catalysts for Polymerization of Acrylates".

- **Bachelor of Science, Chemistry (2000-2004)**  
**Hashemite University, Zarqa, Jordan.**
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#### Software Skills

- Zoom®, Microsoft Teams®, Microsoft office®, Mestronova®, Chemoffice®-Ultra 13.0.2.3021, Corel Photo-paint X6 16.3.0.1114, in addition to actively supervising/manipulating software packages as in Mettler-Toledo MMIR45m RB04-50 provided with pressure vessels (50 ml-autoclave), CEM-discover (S-class) microwave reactor, along with different analytics/instrumentation such as IR, EA, TGA, DSC, GPC, and NMR.

#### Languages & Soft skills

- **Arabic** (mother tongue), **English** (Advanced, fluency in both written and spoken English), and **German** (Basic level, A1). Target-oriented, team-player, research developer, innovative, knowledge of schlenk techniques, glove box, autoclave manipulation. **Hobbies:** Swimming, football, solving puzzles, and cooking.
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#### Awards & Prizes

- Dr.-Ing. Leonhard-Lorenz-foundation's research grant-2014.
  - German Chemical Society (**GDCh**) Travelling Grant to Gordon Research Conference-Green Chemistry, Hong Kong, China, 2014.
  - Technical University of Munich-Graduate School (**TUM-GS**) Travelling Grant to 243<sup>rd</sup> ACS meeting, Philadelphia, USA, 2012.
  - **Best Poster Presentation**, (European-Asian Chemical Conference of Chemical Sciences, Eu-AsC<sub>2</sub>S-11, Deadsea, Jordan, 2010.
  - A Fully-Funded PhD fellowship due to a (**TUM/KAUST**) Joint Venture.
  - **Best Winning M. Sc. Lecture**, "1<sup>st</sup> Jordanian Chemical Symposium for M. Sc. and B. Sc. Students" Moutah University, Al-Karak, Jordan, 2006.
  - A Fully-Funded M. Sc. fellowship, Hashemite University.
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#### Research Interest

- **Carbon Capture and Sequestration and Utilization (CCS & CCU)**  
Synthesis of novel materials for the capturing of CO<sub>2</sub>. I was primarily involved in the development of 'Green Sorbents' for the capture of CO<sub>2</sub>. Syntheses of these materials were following Green Chemistry protocols. Interest is based on the utilization of cheap resources to make efficient sorbents with best working performances at ambient conditions.
- **Homogeneous Catalysis & Polymer Synthesis (Organic Chemistry, 8+ modules)**  
Synthesis of biodegradable plastics starting from CO<sub>2</sub> is a must that can be used in plastic bags or packaging industries. Synthesis of novel materials all the way through coordination polymerization, and controlled radical polymerization. Furthermore, preparation of **organic monomers** starting from commercially available renewable resources. In addition, development of synthetic protocols under mild reaction conditions.

- **Molecular Catalysis & Activation of Small Molecules**

Synthesis and development of useful inexpensive, commercially available-, economically viable starting materials *e.g.* CO<sub>2</sub>, that can be applied in organic synthesis followed by finding new applications, in multidisciplinary fields such as polymerization, Catalysis, Green chemistry, and Ionic liquids.

- **Organometallic Bio- & Inorganic Chemistry**

Design, synthesis and characterization of transition metal-based complexes ‘know-hows’ that can be applied as catalysts for polymerization reactions and organic synthesis, or even testing its bioactivity. Medicinal applications of the synthesized complexes as antitumor agents, and their utilization in medicinal chemistry.

**Internships  
& Training  
Courses**

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- ***Sustainable Development Through Effective Knowledge Sharing***, Center for international Migration (CIM), 18 Hrs, 5<sup>th</sup> February – 6<sup>th</sup> February, 2017, Jordan Valley Marriott Hotel, Jordan. ***University Industry Collaboration Workshop -Cooperation Opportunities and Challenges–***, German Jordanian University, 1<sup>st</sup>, June, 2016, Al Mushaqqar, Jordan.
  - ***E-Camp! Enterprising Knowledge***, “Discover your entrepreneurial opportunities – develop market perspectives for your research!” +50 Hrs, 25<sup>th</sup> February – 2<sup>nd</sup> March, 2013, TUM Entrepreneurship Research Institute, TUM, Germany.
  - ***Giving Academic Talks***, 10 Hrs, Carl V. Linde Academy/Central institute of TUM, TUM, Germany.
  - ***Responsible Future Life and Career Plans***, 14 Hrs, 14<sup>th</sup> TUM-GS ‘Kick-off Seminar’, 13<sup>th</sup>-16<sup>th</sup>, November, 2012, Frauenchiemsee, Germany.
  - ***Surviving Complex Projects***, 14 Hrs, Carl V. Linde Academy/Central institute of TUM, TUM, Germany.
  - ***Presenting Convincingly and Self-Confidently***, 16 Hrs, Carl V. Linde Academy/Central institute of TUM, TUM, Germany.
  - ***Research Internship to KAUST Catalysis Center (KCC) which Spanned from*** May, 2<sup>nd</sup> - June, 25<sup>th</sup>/2011, Thuwal, KSA. Prof. J.-M. Basset.
  - ***Introduction to IR Spectroscopy***, +30 Hrs, February, 28<sup>th</sup> – March, 18<sup>th</sup> /2011, TUM, Germany.
  - ***British Council Trainer Training***, 30 Hrs, Islamic Educational College, Jordan.
  - ***Education and Evaluation Technology***, 18 Hrs, Hashemite University, Jordan.
  - ***E-Learning: Lectora***®, ***Blackboard***®, ***Tegrity***®, ***Elluminate***®, 30 Hrs, Hashemite University, Jordan.

**Professional  
Membership**

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- American Chemical Society (ACS).
  - Jordanian Chemical Society (JCS).
  - CO<sub>2</sub>Chem Network.
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1. A. F. Eftaiha, **A. K. Qaroush**, G. Kayed, A. Abdalrahman, K. I. Assaf, and M. Paige Morphological and Interaction Characteristics of Surface Active Ionic Liquids and Palmitic Acid in Mixed Monolayers. DOI: <https://doi.org/10.1002/cphc.202000359> (ISI Journal)
2. F. M. Al-Qaisi, **A. K. Qaroush**,\* A. H. Smadi, F. Alsubani, K. I. Assaf, T. Repo and A. F. Eftaiha, CO<sub>2</sub> coupling with epoxides catalysed by using one-pot synthesised, in situ activated zinc ascorbate under ambient conditions. *Dalton Trans.*, 2020, 49, 7673–7679. (*Privileged with an inside back cover page, and hot article assignments*). (ISI Journal)
3. A. F. Eftaiha, **A. K. Qaroush**,\* A. Alsayed, F. Al-Qaisi, F. Alsubani and K. I. Assaf. The Eternal Battle for Global Warming: (Thio)Urea as CO<sub>2</sub> Wet Scrubbing Agents, *Phys. Chem. Chem. Phys.*, 2020, **22**, 11829-11837, (*Privileged with a hot article assignments*). (ISI Journal)
4. A. F. Eftaiha, **A. K. Qaroush**,\* M. A. Abu-Daibes, H. M. Alsyouri, and K. I. Assaf, New Metrics of Green Sorbents for CO<sub>2</sub> Capturing, *Adv. Sustainable Syst.*, **2020**, 1900121, DOI: <https://doi.org/10.1002/adsu.201900121> (*Privileged with a front cover page*). (ISI Journal)
5. A. F. Eftaiha, **A. K. Qaroush**,\* I. K. Okashah, F. Alsubani, J. Futter, C. Troll, B. Rieger and K. I. Assaf, CO<sub>2</sub> activation through C–N, C–O and C–C bond formation. *Phys. Chem. Chem. Phys.*, **2020**, **22**, 1306-1312. (ISI Journal)
6. K. I. Assaf, A. F. Eftaiha, S. K. Bardaweel, M. A. Alnajjar, F. A. Alsubani, **A. K. Qaroush**. Encapsulation of ionic liquids inside cucurbiturils, *Organic & Biomolecular Chem.*, 2020, **18** (11), 2120-2128. (ISI Journal)
7. A. S. Abu-Surrah, **A. K. Qaroush**. Benzothiophene-based complexes mediated formation of cyclic carbonates by cycloaddition of carbon dioxide to epoxides under mild solvent-free conditions, **2020**, *Trans. Metal Chem.*, **45** (1), 41-46. (ISI Journal)
8. K. I. Assaf, A. K. Qaroush, F. M. Mustafa, F. Alsubani, T. M. Pehl, C. Troll, B. Rieger, A. F. Eftaiha. Biomaterials for CO<sub>2</sub> Harvesting: From Regulatory Functions to Wet Scrubbing Applications. *ACS Omega*, **2019**, **4**, 7, 11532-11539. (ISI Journal)
9. A. F. Eftaiha, F. M. Mustafa, F. A. Alsubani, K. I. Assaf, **A. K. Qaroush**,\* A catecholamine neurotransmitter: epinephrine as a CO<sub>2</sub> wet scrubbing agent. *Chem. Commun.*, **2019**, **55**, 3449--3452 (*Privileged with an inside back cover page*). (ISI Journal)
10. A. F. Eftaiha, **A. K. Qaroush**,\* F. A. Alsubani, T. Pehl, C. Troll, B. Rieger, B. A. Al-Maythaly, and K. I. Assaf, A green sorbent for CO<sub>2</sub> capture:  $\alpha$ -cyclodextrin-based carbonate in DMSO solution. *RSC Adv.*, **2018**, **8**, 37757-37764. (*Highlighted on the website of Berkeley Global Science Institute, UC Berkeley*). (ISI Journal)
11. **A. K. Qaroush**,\* F. A. Alsubani, A. M. Al-Khateeb, E. Nabih, E. Al-Ramahi, M. F. Khanfar, K. I. Assaf, A. F. Eftaiha, An Efficient Atom-Economical Chemoselective CO<sub>2</sub> Cycloaddition using Lanthanum Oxide/Tetrabutylammonium Bromide. *Sus. Energy & Fuels*, **2018**, **2**, 1342-1349. (ISI Journal)

12. **A. K. Qaroush,\*** H. S. Alshamaly, S. S. Alazzeah, R. H. Abeskhran, K. I. Assaf, and A. F. Eftaiha, Inedible saccharides: a platform for CO<sub>2</sub> capturing, *Chem. Sci.*, **2018**, 9, 1088-1100. (*Privileged with a back cover page*). (ISI Journal)
13. A. F. Eftaiha, **A. K. Qaroush,\*** K. I. Assaf, F. Alsoubani, T. Pehl, C. Troll, M. El-Barghouthi, Bis-Tris Propane in DMSO as a Wet Scrubbing Agent: Carbamic Acid as a Sequestered CO<sub>2</sub> Species, *New J. Chem.*, **2017**, 41 (20), 11941-11947. (ISI Journal)
14. **A. K. Qaroush,\*** K. I. Assaf, S. K. Bardaweel, A. Al-Khateeb, F. Alsoubani, E. Al-Ramahi, M. Masri, T. Brück, C. Troll, B. Rieger, A. F. Eftaiha, Chemisorption of Carbon Dioxide by a Biodegradable Chitosan Oligosaccharide/DMSO Green Sorbent: Novel Organic Carbamate-Carbonate Bond Formation. *Green Chem.*, **2017**, 19, 4305-4314. (*Privileged with a front cover page*). (ISI Journal)
15. **A. K. Qaroush,\*** K. I. Assaf, A. Al-Khateeb, F. Alsoubani, E. Nabih, C. Troll, B. Rieger, A. F. Eftaiha, Pentaerythritol-Based Molecular Sorbent for CO<sub>2</sub> Capturing: A Highly Efficient Wet Scrubbing Agent. *Energy Fuels*, **2017**, 31 (8), 8407–8414. (ISI Journal)
16. K. I. Assaf, **A. K. Qaroush,\*** A. F. Eftaiha, New Insights in the Chemistry of Ionic Alkylorganic Carbonates: A Computational Study. *Phys. Chem. Chem. Phys.*, **2017**, 19 (23), 15403-15411. (ISI Journal)
17. A. F. Eftaiha, F. Alsoubani, K. I. Assaf, C. Troll, B. Rieger, A. H. Khaled and **A. K. Qaroush\***. An Investigation of Carbon Dioxide Capture by Chitin Acetate/DMSO Binary System, *Carbohydrate Polymers*, **2016**, 152 (5), 163-169. (ISI Journal)
18. A. F. Eftaiha, F. Alsoubani, K. I. Assaf, W. M. Nau, C. Troll, and **A. K. Qaroush\***. Chitin-acetate/DMSO as a supramolecular green CO<sub>2</sub>-phile, *RSC Adv.*, **2016**, 6, 22090-22093. (ISI Journal)
19. A. S. Abu-Surrah, M. Sunjuk, K. A. Abu Safieh, **A. K. Qaroush**, and F. M. Al-Qaisee. “ $\gamma$ -Diimine Palladium(II) Based Complexes Mediated Atom Transfer Radical Polymerization of Methyl Methacrylate”. *Arab. J. Chem.*, **2013**, 10 (S1), S1209-S1215. <http://dx.doi.org/10.1016/j.arabjc.2013.02.019>. (ISI Journal)
20. **A. K. Qaroush,\*** D. A. Castillo-Molina, C. Troll, M. A. Abu-Daibes, H. M. Alsyouri, A. S. Abu-Surrah and B. Rieger. [n]-Oligourea-Based Green Sorbents with Enhanced CO<sub>2</sub> Sorption Capacity. *ChemSusChem*, **2015**, 8, 1618-1626. *Highlighted in decoded Science*. <http://www.decodedscience.com/green-chemistry-to-capture-carbon-dioxide/53984>. (ISI Journal)
21. **A. K. Qaroush**, A. S. Al-Hamayda, Y. K. Khashman, S. I. Vagin, C. Troll, and B. Rieger. “Highly Efficient Isocyanate-Free Microwave-Assisted Synthesis of [6]-Oligourea”. *Hot Article. Catal. Sci. Technol.*, **2013**, 3, 2221-2226. (ISI Journal)
22. **A. K. Qaroush**, A. S. Al-Hamayda, Y. K. Khashman, S. I. Vagin, C. Troll, and B. Rieger. *Catal. Sci. Technol.*, **2013**, 3, 2150-2150, DOI: 10.1039/C3CY90028B. (*Privileged with an inside cover page*).
23. M. Sunjuk, A. S. Abu-Surrah, E. Al-Ramahi, **A. K. Qaroush**, and A. Saleh. “Selective coupling of carbon dioxide and epoxy styrene *via* salicylaldehyde, thiophenaldimine, and quinolinaldime- iron(II), iron(III), chromium(III) and cobalt(III)/Lewis base catalysts”. *Trans. Met. Chem.*, **2013**, 38(3), 253-257. (ISI Journal)

24. A. S. Abu-Surrah, K. A. Abu Safieh, I. M. Ahmad, M. Y. Abdalla, M. T. Ayoub, **A. K. Qaroush** and A. M. Abu-Mahtheich. "New Palladium(II) Complexes Bearing Pyrazole-Based Schiff Base Ligands: Synthesis, Characterization and Cytotoxicity". *Eur. J. Med. Chem.*, **2010**, 45, 471–475. **(ISI Journal)**
25. A. S. Abu-Surrah; R. Ghanem, and **A. K. Qaroush**, "Well-defined Metal Complexes-Catalyzed Polar Polymer Synthesis", A. S. Abu-Surrah, and K. Ibrahim (*Eds.*), "Polymerization of vinyl monomers *via* transition metal-based catalysts bearing bis(imino)pyridine ligands", Research Signpost, **2008**. ISBN: 978-81-7895-368-7. **(Chapter in a review book)**
26. A. S. Abu-Surrah, and **A. K. Qaroush**. "Polymerization of Vinyl Monomers *via* MAO Activated Iron(II) Dichloro Complexes Bearing Bis(imino)pyridine-, Quinolinaldimine and Thiophenealdimine Based Tridentate Nitrogen Ligands". *Eur. Polym. J.*, **2007**, 43, 2967–2974. **(ISI Journal)**
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## **2. Oral Presentation:**

1. A. F. Eftaiha; **A. K. Qaroush**, *et al.* Carbon Dioxide Sequestration using Bio-Renewable Materials. Oral Presentation, 7th European Chemical Science "EuChemS" Chemistry Congress, (26-30)-8-**2018**, Liverpool, United Kingdom.
2. **A. K. Qaroush**, *et al.* The Birth of Green Sorbents for CO<sub>2</sub> Capturing: The Chemistry of Carbamates and Organic Ionic Alkylcarbonates. Oral Presentation, 15th Jordanian Chemical Conference, (5-6)-4-**2017**, Mafrq, Jordan.
3. A. F. Eftaiha; **A. K. Qaroush**, *et al.* Chitin Acetate/DMSO Binary Mixture as a Green Sorbent for CO<sub>2</sub> Capturing. Oral Presentation, 15th Jordanian Chemical Conference, (5-6)-4-**2017**, Mafrq, Jordan.
4. **A. K. Qaroush**, [n]-Oligourea-based Green Sorbents as Novel Materials for the Capturing of CO<sub>2</sub>. **Oral Presentation**, *Invited speaker*, Hamdi Mango Center for Scientific Research (HMCSR)-Jordan University, Amman, Jordan, May, 7th, **2015**.
5. **A. K. Qaroush**, [n]-Oligourea-based Green Sorbents as Novel Materials for the Capturing of CO<sub>2</sub>. **Oral Presentation**, *Invited speaker*, International Conference for Advanced Materials (ICAM2015), Jordanian University for Science and Technology (JUST), Irbid, Jordan, April, (27th-29th), **2015**.
6. **A. K. Qaroush**, [n]-Oligoureas as Green Sorbents for the Capturing of CO<sub>2</sub>. **Oral Presentation**, 14th Jordanian Chemical Conference (IVX-JCC), Al al-Bayt University, Mafrq, Jordan, April, (8th), **2015**.
7. **A. K. Qaroush**, D. A. Castillo-Molina, C. Troll, and B. Rieger, "[n]-Oligoureas as Novel Green Solid Sorbents for the Capturing of CO<sub>2</sub>", **Oral presentation**, Gordon Research Conference on Green Chemistry, Hong Kong, China, (27<sup>th</sup>, July-1<sup>st</sup> August), **2014**.
8. **A. K. Qaroush**, Cyclic Carbonates as Valuable Carbonylating Agents: From Synthesis to Application., **Oral Presentation**, *Invited speaker*, Hashemite University, Zarqa, Jordan, 29<sup>th</sup>, November, **2012**.



9. **A. K. Qaroush**, Schiff Base Containing Late Transition Metal Based Complexes as Chemoselective Catalysts for the Synthesis of Styrene Carbonate. *Oral Presentation*, International Conference on Sciences-2012 (ICS), Al al-Bayt University, Mafraq, Jordan, November, (20<sup>th</sup>-22<sup>nd</sup>), **2012**.
  10. **A. K. Qaroush**. "Synthesis of New Penta-Coordinated Iron(II) and Cobalt(II) Complexes Bearing Bis(Imino)Pyridine-, Salicylaldimine-, and Quinaldimine- Based Tridentate Ligands" *Oral Presentation, Best Winning M. Sc. Lecture*, "1<sup>st</sup> Jordanian chemical symposium for M. Sc. and B. Sc. Students", April 26<sup>th</sup>, **2006**, Al-Karak, Jordan.
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### 3. Posters:

1. M. H. Al-Anati, S. B. Hammad, A. A. Aladwan, T. C. Tadros, B. S. Abu imran, K. I. Assaf, A. F. Eftaiha, **A. K. Qaroush**, "Bis-armed Alkylencimidazolium Bromide as an Organocatalyst for CO<sub>2</sub> Fixation and Utilization at Atmospheric Conditions", *Poster*, 16<sup>th</sup> Jordanian Chemical Conference (16<sup>th</sup> JCC), The University of Jordan, Amman, Jordan, 29<sup>th</sup> October, **2019**.
2. F. M. Mustafa, K. I. Assaf, A. K. Qaroush, and A. F. Eftaiha, Biomaterials as CO<sub>2</sub> wet scrubbers, *Poster*, 16<sup>th</sup> Jordanian Chemical Conference (16<sup>th</sup> JCC), The University of Jordan, Amman, Jordan, 29<sup>th</sup> October, **2019**.
3. I. K. Okashah, A. F. Eftaiha, **A. K. Qaroush**, and K. I. Assaf. Carbon Dioxide Activation throughout C-N, C-O and C-C Bond Formation, *Poster*, 16<sup>th</sup> Jordanian Chemical Conference (16<sup>th</sup> JCC), The University of Jordan, Amman, Jordan, 29<sup>th</sup> October, **2019**.
4. H. Abed Al-Fattah, A. F. Eftaiha, S. K. Bardaweel, F. A. Alsoubani, **A. K. Qaroush**, M. I. El-Barghoughi, K. I. Assaf. Encapsulation of Ionic Liquids inside Cucurbiturils for Potential Therapeutic Application, *Poster*, 16<sup>th</sup> Jordanian Chemical Conference (16<sup>th</sup> JCC), The University of Jordan, Amman, Jordan, 29<sup>th</sup> October, **2019**.
5. A. F. Eftaiha; **A. K. Qaroush**, Supramolecular Chemisorption of Carbon Dioxide by Chitin Acetate Oligomer. *Poster*, **2016**, Renewable Carbon Workshop "Mellichamp Academic Initiative in Sustainability", 21-9-2016, Santa Barbara, California, United State of America.
6. **A. K. Qaroush**, D. A. Castillo-Molina, C. Troll, and B. Rieger, "[*n*]-Oligoureas as Novel Green Solid Sorbents for the Capturing of CO<sub>2</sub>", *Poster*, Gordon Research Conference on Green Chemistry, Hong Kong, China, (27<sup>th</sup> July-1<sup>st</sup> August), **2014**.
7. **A. K. Qaroush**, C. Troll, and B. Rieger. "Propylene Carbonate as a Green Carbonylating Agent: A Novel Methodology for the Synthesis of [*n*]-Oligourea", *Poster*, International Conference on Sciences-2012 (ICS), Al al-Bayt University, Mafraq, Jordan, November, (20<sup>th</sup>-22<sup>nd</sup>), **2012**.
8. **A. K. Qaroush**, C. Troll, and B. Rieger. "Novel Task Specific Ionic Liquids as Sorbents for the Capture of CO<sub>2</sub>", *Poster*, "Carbon Dioxide as Feedstock for Chemistry and Polymers", Essen, Germany, October, (10<sup>th</sup>-11<sup>th</sup>), **2012**.



9. **A. K. Qaroush**, A. S. Al-Hamayda, Y. K. Khashman, V. D'Elia, S. I. Vagin, C. Troll, and B. Rieger. A New Organocatalyzed Microwave-Assisted Isocyanate-Free Synthesis of [n]-Oligourea: A New energy-saving, eco-friendly method generating Oligourea Using Green Chemistry Approaches, *Poster*, **244<sup>th</sup> ACS national meeting**, Philadelphia, Pennsylvania, United States. August, (19<sup>th</sup>–23<sup>rd</sup>), **2012**.
10. **A. K. Qaroush**, Y. Li, C. E. Anderson, S. Y. T. Lee, K. Salmeia, A. Monassier, C. Troll, M. Cokoja, F. E. Kühn, and B. Rieger. CO<sub>2</sub> as a Building Block for the Synthesis of Cyclic Urea/Urethanes, *Poster*, European-Asian Chemical conference of chemical Sciences, Eu-AsC<sub>2</sub>S-11, Deadsea, Jordan, October, (6<sup>th</sup>-10<sup>th</sup>), **2010**. *Best Poster Presentation for all sections of chemistry*.
11. K. Salmeia, C. E. Anderson, **A. K. Qaroush**, A. Monassier, S. Y. T. Lee, C. Troll, M. Cokoja, F. E. Kühn, and B. Rieger. Poly(propylene carbonate): Physical Properties and Microstructure”. *Poster*, European-Asian Chemical conference of chemical Sciences, Eu-AsC<sub>2</sub>S-11, Deadsea, Jordan, October, (6<sup>th</sup>-10<sup>th</sup>), **2010**.
12. A. Monassier, S. Y. T. Lee, Y. Li, **A. K. Qaroush**, K. Salmeia, C. E. Anderson, C. Troll, M. Cokoja, F. E. Kühn, and B. Rieger. “Molecular Activation of CO<sub>2</sub>: Synthetic Routes towards New Activating Complexes”. *Poster*, European-Asian Chemical conference of chemical Sciences, Eu-AsC<sub>2</sub>S-11, Deadsea, Jordan, October, (6<sup>th</sup>-10<sup>th</sup>), **2010**.
13. S. Y. T. Lee, A. Monassier, Y. Li, **A. K. Qaroush**, K. Salmeia, C. E. Anderson, C. Troll, M. Cokoja, F. E. Kühn, and B. Rieger. “Formation of Methyl Acrylate from CO<sub>2</sub> and Ethylene *via* Methylation of Nickelalactones”. *Poster*, European-Asian Chemical conference of chemical Sciences, Eu-AsC<sub>2</sub>S-11, Deadsea, Jordan, October, (6<sup>th</sup>-10<sup>th</sup>), **2010**.
14. **A. K. Qaroush**, F. M. Alqaisi, and A. S. Abu-Surrah. “ $\alpha$ -Olefin-Functionalized Polymers with MAO Activated Iron(II) Dichloro Complexes Bearing Bis(imino)pyridine-, Quinaldimine- and Thiophenaldimine-based Tridentate Nitrogen Ligands”. *Poster*, 7<sup>th</sup> Jordanian International Conference in Chemistry [7<sup>th</sup> JCC], Al al-Bayt University, Mafraq, Jordan. March, 1<sup>st</sup>, **2007**.
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Amman, 21/09/2020

Signature:



A handwritten signature in black ink, appearing to be 'F. Anoush', written below the 'Signature:' label.