

Prof. Dr. Mahmoud Al-Hussein

Full Professor of Materials Physics
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Education

Oct. 1996 to Jan. 2000 Interdisciplinary Research Centre (IRC) of Polymer Science and Technology, Department of Physics, University of Leeds, Leeds, UK
Ph.D. in Polymer Physics
“Mechanical Behaviour of Oriented Polyethylenes”
Supervised by Professors I. M. Ward and G. R. Davies

Sep. 1992 to June 1995 Department of Physics, The University of Jordan, Amman, Jordan
M.Sc. in Physics
“Photoacoustic Spectroscopy of Multilayered Samples by Front Illumination”.
Supervised by Professor I. S. Shahin

Sep. 1988 to June 1992 Department of Physics, Yarmouk University, Irbid, Jordan
B.Sc. in Physics

Sep. 1987 to June 1988 Irbid Secondary School, Irbid, Jordan

High School Diploma (AGP: 88.8%)

Work Experience

Oct. 2019 to Present **IPF Fellow:** The Leibniz Institute of Polymer Research Dresden (IPF), Dresden, Germany.

Feb. 2020 to Oct. 2023 **Director:** Hamdi Mango Center for Scientific Research, The University of Jordan, Amman, Jordan.

Nov. 2017 to Nov. 2018 **Head:** University of Jordan Nano Center Council, The University of Jordan, Amman, Jordan.

Sep. 2016 to Oct. 2018 **Head:** Physics Department, The University of Jordan, Amman, Jordan.

Sep. 2015 Present	to	Full Professor: Physics Department, The University of Jordan, Amman, Jordan.
Sep. 2013 Sep. 2014	to	Visiting Professor: Leibniz Institute of Polymer Research Dresden, Dresden, Germany.
Sep. 2011 Sep. 2015	to	Associate Professor: Physics Department, The University of Jordan, Amman, Jordan.
July 2010 Sep. 2012	to	Assistant Dean for Development Affairs: Faculty of Science, The University of Jordan, Amman, Jordan.
Sep. 2005 Sep. 2011	to	Assistant Professor: Physics Department, The University of Jordan, Amman, Jordan.
Oct. 2002 Jan 2005	to	Research Fellow: Preparing and investigating nanostructures using self-assembled polymeric materials. FOM-Institute for Atomic and Molecular Physics, Amsterdam, The Netherlands .
Jan. 2000 Sep. 2002	to	Research Fellow: Investigating the structure formation mechanisms in semicrystalline polymers from the melt and glassy states. Fakultät für Physik, University of Freiburg, Germany .
Jan. 2001 Sep. 2002	to	Tutor: Taught and coordinated tutorial classes of the condensed matter physics course for second year physics students. Taught, demonstrated and assessed practical experiments in the Fakultät für Physik, University of Freiburg.
Oct. 1996 Sep. 1999	to	Teaching Assistant: Taught tutorial classes for first year physics students in the physics department, University of Leeds. Taught, demonstrated and assessed practical experiments in the second year laboratory, which also included evaluating oral presentations.
July 1995 Sep. 1996	to	Teaching assistant: Taught practical physics for undergraduate students of the physics department at the Jordan University of Science & Technology.
Sep. 1992 Sep. 1995	to	Teaching assistant: Demonstrated and assessed experiments to undergraduate students of the physics department at the University of Jordan.

Awards & Fellowships

Jan. 2020		Distinguished researcher award , The University of Jordan, Amman, Jordan
July 2023 July 2024	to	Visiting Professor, Leibniz Institute of Polymer Research, Dresden, Germany.
July 2022 Sep. 2022	to	Visiting Professor, Leibniz Institute of Polymer Research, Dresden, Germany.
Aug. 2019 to Sep. 2019		Visiting Professor, Leibniz Institute of Polymer Research, Dresden, Germany.
Aug. 2018 to Sep. 2018		Visiting Professor, Leibniz Institute of Polymer Research Dresden, Dresden, Germany.
July 2017 Sep. 2017	to	Visiting Professor, Leibniz Institute of Polymer Research Dresden, Dresden, Germany.
Jan. 2017 Jan. 2017	to	Erasmus+ grant, PhD course lecturer, Lund University, Lund, Sweden.

Aug. 2016 to Visiting Professor, Leibniz Institute of Polymer Research Dresden,
 Sep. 2016 Dresden, Germany.

June 2015 to Visiting Professor, Leibniz Institute of Polymer Research Dresden,
 Sep. 2015 Dresden, Germany.

June 2012 to Visiting scientist, Physics Department, TU München, Germany. Grant
 Sep. 2012 provided by the Erasmus Mundus Mamaself Project.

June 2011 to Visiting scientist, Physics Department, TU München, Germany. Grant
 Sep. 2011 provided by the TU München, Physik Department.

June 2009 to Visiting scientist, Physics Department, LMU, Germany. Grant provided by
 Sep. 2009 the DFG

Feb. 2008 to Fellowship provided by the IAEA spent at the Physics Department, TU
 Sep. 2008 München, Germany.

Oct. 1996 to Partial scholarship from the Physics Department, University of Leeds.
 Sep. 1999

Oct. 1996 to Partial scholarship from the Arab-British Charitable Foundation.
 Sep. 1999

Research Interests

- Advanced nanostructured materials and thin films
- Organic semiconductors and their applications in energy and electronics
- Solid state electrolytes, fuel cells and proton exchange membranes
- Biopolymers nanocomposites
- Advanced X-ray scattering techniques using synchrotron radiation
- Structural formation, deformation mechanisms and mechanical properties of organic materials.

Collaboration

- Prof. Andreas Fery, Chair for Physical Chemistry of Polymeric Materials, Leibniz Institute of Polymer Research Dresden, Dresden, Germany
- Prof. Petra Uhlmann, Leibniz Institute of Polymer Research Dresden, Dresden, Germany
- Prof. Franziska Lissel, Leibniz Institute of Polymer Research Dresden, Dresden, and Technische Universität Hamburg, Hamburg, Germany
- Prof. Quinn Beford, Leibniz Institute of Polymer Research Dresden, Dresden, Germany
- Prof. Peter Müller-Buschbaum, Technical University of Munich, TUM School of Natural Sciences, Department of Physics, Garching, Germany
- Prof. Lukas Schmidt-Mende, University of Konstanz, Universitätsstr, Faculty of Physics, Konstanz, Germany
- Prof. Hamdalah Houdali, The University of Jordan, School of Science, Chemistry Department, Amman, Jordan
- Prof. Hatem Al-Khatib, The University of Jordan, School of Pharmacy, Amman, Jordan
- Prof. Ghadeer Mehyar, The University of Jordan, School of Agriculture, Amman, Jordan

Reviewing

- ACS Applied Materials & Interfaces, ACS
- Materials Today Communications, Elsevier
- Thin Solid Films, Elsevier
- Polymer Engineering & Science, Wiley
- Jordan Journal of Physics
- Research on Chemical Intermediates, Springer
- Polymer Bulletin, Springer
- Molecules, MDPI AG
- Polymer Chemistry, RSC Publishing
- Macromolecular Rapid Communications, WILEY-VCH Verlag GmbH & Co. KGaA,
- Journal of Polymer Engineering, De Gruyter
- Dirasat, University of Jordan, Deanship of Academic Research
- The Jordan Scientific Research Fund
- The Palestine Scientific Research Fund

Memberships

- Materials Research Society, 2010-2011
- American Nano Society 2011-
- Jordanian Physics Society 2017-

Referees

- Professor G. Strobl, Institute of Physics, Faculty of Mathematics and Physics, Albert-Ludwig-University of Freiburg, Hermann-Herder-Str. 3, 79104 Freiburg, Germany, Tel.: +49 761 203 97777 Fax: +49 761 203 5855, Email: strobl@uni-freiburg.de
- Professor Andreas Fery, Chair for Physical Chemistry of Polymeric Materials, Leibniz Institute of Polymer Research Dresden, Hohe Strasse 6, 01069, Dresden, Germany, Tel:+49 (0)351 4658 225, Fax: +49 (0)351 4658 281, Email: fery@ipfdd.de
- Professor Petra Uhlmann, Leibniz Institute of Polymer Research Dresden, Hohe Strasse 6, 01069, Dresden, Germany, Tel:+49 (0)351 4658-236, Fax: +49 (0)351 4658-1326, Email: uhlmannp@ipfdd.de
- Professor Humam Ghassib, University of Jordan, Physics Department, Amman 11942, Jordan, Tel: 00962777872122, Email: hghassib@orange.jo

Publications of Mahmoud Al-Hussein

1. "Stretchable semiconducting triblock copolymer blends: Exploring the impact of block size", Oliver Ditzer, Mahmoud Al Hussein, Fritz Henke, Sabour Un Nisa, Petr Formanek, Franziska Lissel, Brigitte Voit, **Eur. Polym. J**, 207, 112840 (2024).
2. "Highly dispersed crystalline magnetic and conductive polyaniline/iron oxide nanocomposite films", Mahmoud Al-Gharram, Petra Uhlmann, Mahmoud Al-Hussein, **Colloids and Surfaces A: Physicochemical and Engineering Aspects**, 684, 133212 (2024).
3. Integrated FRET Polymers spatially reveal micro- to nanostructure and irregularities in electrospun microfibers", Xiaojian Liao, Dmitrii Sychev, Khrystyna Rymsha, Mahmoud Al-Hussein, José Paulo Farinha, Andreas Fery, Quinn A. Besford, **Advanced Science**, 19, 194 (2023).
4. "Preparation and characterization of drug-loaded, electrospun nanofiber mats formulated with zein or zein-based mixtures for wound healing applications", S. Aljamal, Sh. Sotari, O. Tarawneh, N. Al-Hashimi, S. Hamed, M. Al-Hussein, H. S. Alkhatib, **Jordan Journal of Pharmaceutical Sciences**, 16, 475 (2023).
5. "Electrical and structural properties of HDPE/MWCNT/PE-g-MA nanocomposites prepared using solution mixing and hot compaction Two-step approach", M. Al-Hussein, A. Jaffal, R. Abu-Zurayk, **Current Nanoscience**, 19, 194 (2023).
6. "Charge-compensated N-doped π -conjugated polymers: Toward both thermodynamic stability of N-doped states in water and high electron conductivity", F. Borrmann, T. Tsuda, O. Guskova, N. Kiriya, C. Hoffmann, D. Neusser, S. Ludwigs, U. Lappan, F. Simon, M. Geisler, B. Debnath, Y. Krupskaya, M. Al-Hussein, A. Kiriya, **Advanced Science**, 9, 2203530 (2022).
7. "Structural templating of an organic solar cell absorber by ellagic acid to tune its aggregation, molecular orientation, and optical properties", E. Bittrich; J. Domke, M. Levichkova, D. Jehnichen, L. Bittrich, A. Janke, P. Formanek, R. Hübner, P. Uhlmann, K.-J. Eichhorn, R. Forker, M. Gruenewald, M. Al-Hussein, T. Fritz, K. Walzer, **ACS Applied Energy Materials**, 4, 14273-14286, (2021).
8. "Highly crystalline conductive electrodeposited films of PANI-CSA/CoFe₂O₄ nanocomposites", M. Al-Gharram, I. Jum'ha, A. Telfah, M. Al-Hussein, **Colloids and Surfaces A: Physicochemical and Engineering Aspects**, 628, 127342 (2021).
9. "Flexible pressure sensors based on the controlled buckling of doped semiconducting polymer nanopillars", T. Tsuda, S. Chae, M. Al-Hussein, P. Formanek, A. Fery, **ACS Applied Materials & Interfaces**, 13, 37445–37454 (2021).
10. "Photovoltaic Cells Based on Ternary P3HT:PCBM: Ruthenium(II) Complex Bearing 8-(diphenylphosphino)quinoline Active Layer", S. Akel, M. A. Sharif, R. Al-Esseili, M. A. Al-Wahish, H. A. Hodali, P. Müller-Buschbaum, L. Schmidt-Mende and M. Al-Hussein, **Colloids and Surfaces A: Physicochemical and Engineering Aspects**, 622, 126685 (2021).

11. "Ultra-soft and high mobility block-copolymers for skin-compatible electronics", K. Ditte, J. Perez, S. Chae, M. Hamsch, M. Al-Hussein, H. Komber, P. Formanek, S. Mannsfeld, A. Fery, A. Kiriy, F. Lisse, **Advanced Materials**, 33, 2005416 (2021).
12. "Morphology of thin films of aromatic ellagic acid and its hydrogen-bonding interactions, E. Bittrich, J. Domke, D. Jehnichen, L. Bittrich, M. Malanin, A. Janke, P. Uhlmann, K.-J. Eichhorn, A. Papamichail, V. Stanishev, V. Darakchieva, M. Al-Hussein, M. Levichkova, T. Fritz, K. Walzer, **J. Phys. Chem. C**, 124, 16381–16390 (2020).
13. "Sequentially processed P3HT/CN6-CP•-NBu4+ films: Interfacial or bulk doping?", Y. Karpov, N. Kiriy, P. Formanek, C. Hoffmann, M. Hamsch, M. Al-Hussein, S. Mannsfeld, B. Büchner, B. Debnath, M. Bretschneider, Y. Krupskaya, F. Lissel, A. Kiriy, **Advanced Electronic Materials**, 6, 1901346 (2020).
14. "Two-step approach based on solution mixing and hot compaction for CNT/HDPE nanocomposite preparation", A. Jaffal, R. Abu-Zurayk, M. Al-Hussein, **Int. J. Electrochem. Sci.**, 14, 6489 (2019).
15. "Synthesis, Structural, and Magnetic Properties of Ba₃(Zn_xMg_{1-x})₂Fe₂₄O₄₁ Z-Type Hexaferrites", E. S. Al-Hwaitat, M. Al-Hussein, I. Bsoul, R. A. Buqain, S. H. Mahmood, **Acta Physica Polonica A**, 136, 548 (2019).
16. "Structural and magnetic properties of Ba₃[Cu_{0.8-x}Zn_xMn_{0.2}]₂Fe₂₄O₄₁ Z-type hexaferrites", E. S. Alhwaitat, S. H Mahmood, M. Al-Hussein, I. Bsoul, **Adv. Mater. Sci. Eng.**, 2018, Article ID 6152020, (2018).
17. "Fabrication and characterization of Ba₃Zn₂Fe₂₄O₄₁ (Zn₂Z) hexaferrites films on silicon substrates", E. S. Alhwaitat, M. Al-Hussein, S. H. Mahmood, I. Bsoul, **J. Alloys and Compounds**, 763, 71-77 (2018).
18. "Hexacyano-[3]-radialene anion-radical salts: a promising family of highly soluble p-dopants" Y. Karpov, N. Kiriy, M. Al-Hussein, M. Hamsch, S. Mannsfeld, B. Voit, A. Kiriy, **Chemical Communications**, 54, 307-310 (2018).
19. "Effects of synthesis route on the structural and magnetic properties of Ba₃Zn₂Fe₂₄O₄₁ (Zn₂Z) nanocrystalline hexaferrites", E. S. Alhwaitat, S. H Mahmood, M. Al-Hussein, O. E. Mohsen, Y. Maswadeh, I. Bsoul, A. Hammoudeh, **Ceramics International**, 44, 779-787 (2018).
20. "Sulfonated polyimide copolymers based on 4,4'-diaminostilbene-2,2'-disulfonic acid and 3,5,3',5'-tetramethylbenzidine with enhanced solubility", M. H. Kailani, B. A. Sweileh, F. M. Abu-Orabi, M. Y. Mustafa, M. Al-Hussein, **Polymer Bulletin**, 74, 895-909 (2017).
21. "The impact of molecular weight, air exposure and molecular doping on the charge transport properties and electronic defects in dithienyl-diketopyrrolopyrrole-thieno[3,2-b]thiophene copolymers", R. Di Pietro, T. Erdmann, N. Wang, X. Liu, D. Gräfe, J. Lenz, J. Brandt, D. Kasemann, K. Leo, M. Al-Hussein, K. L. Gerasimov, D.

Doblas, D. i. A. Ivanov, B. Voit, D. Neher, A Kiriya, **Journal of Materials Chemistry C**, 4, 10827 (2016).

22. "Structural investigation of P(BPMA/CPHMA) and P(MMA/BPMA/CPHMA) copolymers", M. Al-Hussein, A. Berndt, D. Jehnichen, L. Häußler, M. Stamm, D. Pospiech. **Colloid and Polymer Science**, 294, 1475 (2016).

23. "High conductivity in molecularly p-doped diketopyrrolopyrrole-based polymer: The impact of a high dopant strength and good structural order", Yevhen Karpov, Tim Erdmann, M. Al-Hussein, M. Stamm, D. Ivanov, F. Günther, S. Gemming, B. Voit, A. Kiriya, **Advanced Materials**, 28, 6003 (2016).

24. "Comparative study of the nanomorphology of spray and spin coated PTB7 polymer:fullerene films", M. Al-Hussein, E. M. Herzig, M. Schindler, F. Löhrer, C. M. Palumbiny, W. Wang, S. V. Roth, P. Müller-Buschbaum, **Polymer Engineering and Science**, 56, 889 (2016).

25. "Copolymerization of zinc-activated isoindigo- and naphthalene-diimide based monomers: an efficient route to low bandgap π -conjugated random copolymers with tunable properties", Y. Karpov, R. Tkachov, J. Maiti, T. Beryozkina, V. Bakulev, W. Liu, H. Komber, U. Lappan, M. Al-Hussein, M. Stamm, B. Voit, A. Kiriya, **Polymer Chemistry**, 7, 2691 (2016).

26. "Test system for through-plane conductivity measurements of hydrogen proton exchange membranes", G. Al-Madani, M. H. Kailani, M. Al-Hussein, **Int. J. Electrochem. Sci.**, 10, 6465 (2015).

27. "Methacrylate copolymers with liquid crystalline side chains for organic gate dielectric applications", A. Berndt, D. Pospiech, H. Komber, D. Jehnichen, L. Häußler, B. Voit, M. Al-Hussein, M. Plötner, A. Kumar, W.-J. Fischer, **ACS Applied Materials & Interfaces**, 7, 12339 (2015).

28. "Influence of semiconductor thickness and molecular weight on the charge transport of a naphthalenediimide-based copolymer in thin-film transistors", Y. Karpov, W. Zhao, I. Raguzin, T. Beryozkina, V. Bakulev, M. Al-Hussein, L. Häußler, M. Stamm, B. Voit, A. Facchetti, R. Tkachov, A. Kiriya, **ACS Applied Materials & Interfaces**, 7, 12478 (2015).

29. "Dielectric function of a poly(benzimidazobenzophenanthroline) ladder polymer", S. Kraner, C. Koerner, K. Leo, E. Bittrich, K.-J. Eichhorn, Y. Karpov, A. Kiriya, M. Stamm, K. Hinrichs, M. Al-Hussein, **Phys. Rev. B**, 91, 195202 (2015).

30. "Reversible thermosensitive biodegradable polymeric actuators based on confined crystallization", V. Stroganov, M. Al-Hussein, J.-U. Sommer, A. Janke, S. Zakharchenko, L. Ionov, **Nano Letters**, 15, 1786 (2015).

31. "The distribution of immobilized platinum and palladium nanoparticles within poly(2-vinylpyridine) brushes", M. Al-Hussein, M. Koenig, M. Stamm, P. Uhlmann, **Macromolecular Chemistry and Physics**, 215, 1679 (2014).

32. "In-situ X-ray study of the structural evolution of gold nano domains by spray deposition on thin conductive P3HT films", M. Al-Hussein, M. Schindler, M. A. Ruderer, J. Perlich, M. Schwartzkopf, G. Herzog, B. Heidmann, A. Buffet, S. V. Roth, P. Müller-Buschbaum, **Langmuir**, 29, 2490 (2013).
33. "Structural properties of the active layer of discotic hexabenzocoronene/perylene diimide hulk-hetero junction photovoltaic devices: The role of alkyl side chain length", M. Al-Hussein, H. C. Hesse, J. Weickert, L. Doessel, X. Feng, K. Muellen, L. Schmidt-Mende, **Thin Solid Films**, 520, 307 (2011).
34. "Determination of the local gold contact morphology on a photoactive polymer film using nanobeam GISAXS", M. Ruderer, V. Körstgens, E. Metwalli, M. Al-Hussein, U. Vainio, S. V. Roth, R. Döhrmann, R. Gehrke, R. Gebhardt, M. Burghammer, P. Müller-Buschbaum, **Nucl. Instrum. Methods Phys. Res. B**, 268, 403 (2010).
35. "Discotic materials for organic solar cells: Effects of chemical structure on assembly and performance", H. C. Hesse, J. Weickert, M. Al-Hussein, L. Dössel, X. Feng, K. Müllen, L. Schmidt-Mende, **Sol. Energy Mat. Sol. Cells**, 94, 560 (2010).
36. "Determination of the ordered structure in conjugated-coil diblock copolymers films from a thickness gradient prepared by spin-coated drop technique", M. Al-Hussein, M. Ruderer, E. Metwalli, V. Körstgens, U. Vainio, S. V. Roth, R. Döhrmann, R. Gehrke, R. Gebhardt, M. Burghammer, P. Müller-Buschbaum, **Macromolecules**, 42, 4230 (2009).
37. "Crystallization induced order in polystyrene-poly(ethylene oxide) metallo-supramolecular diblock copolymer", M. Al-Hussein, W. H. de Jeu, **Polymer**, 50, 2149 (2009).
38. "Investigating nanoscopic patterned surfaces of a semifluorinated liquid crystalline diblock copolymer using X-ray scattering techniques", M. Al-Hussein Conference: **Materials Research Society Symposium Proceedings**; 123-129 Grazing-incidence small-angle X-ray scattering Symposium, Boston, Massachusetts, USA, Volume: 1147 (2008).
39. "Self-assembly of poly(ferrocenyldimethylsilane-*b*-methyl methacrylate) block copolymers in a selective solvent", I. Korczagin, M. A. Hempenius, R. G. Fokkink, M. A. Cohen Stuart, M. Al-Hussein, P. H. H. Bomans, P. M. Frederik, G. J. Vancso, **Macromolecules**, 39, 2306 (2006).
40. "Liquid crystallinity in block copolymers films for polymeric nanopatterns", W. H. de Jeu, Y. Serero, and M. Al-Hussein, **Adv. Polym. Sci.**, 71, 200 (2006).
41. "Self-assembly of PFS-*b*-PMMA block copolymers in a selective solvent", M. A. Hempenius, I. Korczagin, R. G. Fokkink, M. A. Cohen Stuart, M. Al-Hussein, P. H. H. Bomans, P. M. Frederik, G. J. Vancso, **Polymer Preprints**, 47(1), 437 (2006).

42. "Nano-ordering of fluorinated side-Chain liquid crystalline diblock copolymers", M. Al-Hussein, Y. Serero, O. Konovalov, A. Mourran, M. Möller, W. H. de Jeu, **Macromolecules**, 38, 9610 (2005).
43. "Phase behavior of the melt of polystyrene-poly(ethyleneoxide) metallo-supramolecular diblock copolymer with bulky counterions", M. Al-Hussein, B. G. G. Lohmeijer, U. S. Schubert, and W. H. de Jeu, **Macromolecules**, 38, 2832 (2005).
44. "Bulk and thin film ordering in side-chain liquid crystalline diblock copolymers: the role of chain length", M. Al-Hussein, W.H. de Jeu, L. Vranichar, S. Pispas, N. Hadjichristidis, T. Itoh, and J. Watanabe, **Macromolecules**, 37, 6401 (2004).
45. "Interplay between smectic ordering and microphase separation in a series of side-group liquid-crystal block copolymers", I. W. Hamley, V. Castelletto, Z. B. Lu, C. T. Imrie, T. Itoh, and M. Al-Hussein, **Macromolecules**, 37, 4798 (2004).
46. "Hydrophilic elastomers for microcontact printing of polar inks", D. C. Trimbach, M. Al-Hussein, W. H. de Jeu, M. Decre, D. J. Broer, and C. W. Bastiaansen, **Langmuir**, 20, 4738 (2004).
47. "The stress relaxation behaviour of isotactic poly(1-butene) and its ethylene copolymers", M. Al-Hussein and G. Strobl, **J. Polym. Sci. B: Polym. Phys.**, 42, 2074 (2004).
48. "Bulk morphology of a metallo-supramolecular block copolymer", B.G.G. Lohmeijer, M. Al-Hussein, W. H. de Jeu, J.M.W. Gohy, U.S. Schubert, American Chemical Society. Division of Polymer Chemistry 45(1):464 (2004).
49. "Strain-controlled tensile deformation behavior and relaxation properties of isotactic poly(1-butene) and its ethylene copolymers", M. Al-Hussein and G. Strobl, **Macromolecular Symposia**, 214, 231 (2004).
50. "Melt morphology of polystyrene-poly(ethylene oxide) metallo-supramolecular diblock copolymer", M. Al-Hussein, B. G. G. Lohmeijer, U. S. Schubert, and W. H. de Jeu, **Macromolecules**, 36, 9281 (2003).
51. "On the mechanisms of recrystallization after melting in semicrystalline polymers: The effect of the initial melt state", M. Al-Hussein and G. Strobl, **J. Macromol. Sci. Phys.**, 42, 677 (2003).
52. "A comparative study of the mechanisms of initial crystallization and recrystallization after melting in syndiotactic polypropylene and isotactic polystyrene", M. Al-Hussein and G. Strobl, in: *Polymer Crystallization: Observations, Concepts and Interpretations* / edited by G. Reiter and J.-U. Sommer, Berlin: Springer, p 46-63, (2003).
53. "Strain-controlled tensile deformation behaviour of isotactic poly(1-butene) and its ethylene copolymers", M. Al-Hussein and G. Strobl, **Macromolecules**, 35, 8515 (2002).

54. "Morphological changes during heating semicrystalline polymers to the melt as revealed by SAXS measurements", M. Al-Hussein and G. Strobl, **e-polymers**, no. 038, (2002).
55. "The melting line, the crystallization line and the equilibrium melting temperature of isotactic polystyrene", M. Al-Hussein and G. Strobl, **Macromolecules**, 35, 1672 (2002).
56. "The mechanisms of recrystallization after melting in syndiotactic polypropene and isotactic polystyrene", M. Al-Hussein and G. Strobl, **Eur. Phys. J. E**, 6, 305 (2001).
57. "Preparation of ultra-high modulus materials from metallocene based linear polyethylenes", M. Al-Hussein, G. R. Davies and I. M. Ward, **Polymer**, 42, 3679 (2001).
58. "Mechanical properties of oriented low-density polyethylene with an oriented lamellar-stack morphology", M. Al-Hussein, G. R. Davies and I. M. Ward, **J. Polym. Sci. B: Polym. Phys.**, 38, 755 (2000).
59. "On the influence of initial morphology on the internal structure of highly drawn polyethylene" T. Amornsakchai, R. H. Olley, D. C. Bassett, M. Al-Hussein, A. P. Unwin and I. M. Ward, **Polymer**, 41, 8291 (2000).

Selected Conferences and Invited Lecture

1. “Structure and Morphology of Nanostructured Organic Materials”, invited talk, Leibniz Institute of Polymer Research Dresden, March 6, 2024, Dresden, Germany.
2. “Structure and Morphology of Nanostructured Organic Thin Films for Nanotechnological Applications”, invited talk, Sharjah International Conference on Physics of Advanced Materials, April 25-27, 2023, Sharjah, UAE.
3. “Advanced X-ray Scattering Techniques for Investigating the Nano Structure and Morphology of Thin Films”, invited talk, Vth International Conference on Oxide and Non-Oxide Materials for Optoelectronics and Energy Applications, March 20-23, 2019, Borovetz, Bulgaria.
4. “Revealing the Structure and Morphology of Nanostructured Materials Using Advanced X-ray Scattering Techniques”, invited talk, First Moroccan Spring School on Advanced Materials, (MoSSAM’1) Marrakech Morocco, April 15-17, 2018.
5. “Polymers: Nanostructures and Some Nanotechnological Applications”, invited talk, 8th Conference for Scientific Research in Jordan, 11, April, 2017, Amman, Jordan.
6. “Reversible Thermoresponsive Biodegradable Polymeric Actuators”, invited talk, Humboldt International Conference: Jordanian Life Sciences for Sustainable Development, 27-29 April, 2017, Amman, Jordan.
7. “Synchrotron Applications of X-ray Diffraction”, invited talk, The Jordanian workshop of SESAME Users, invited talk, Amman, 4 May, 2017.
8. “Grazing Incidence X-ray Scattering of Thin Nanostructured Films”, invited talk, The Swedish Synchrotron Facility MAXIV, 24 January, 2017, Lund, Sweden.
9. “Nanostructured Materials Using Self-Assembling Polymeric Systems”, invited talk, Pure and Applied Biochemistry Department, Lund University, 23 January, 2017, Lund, Sweden.
10. “PhD Course on Soft Organic Nanostructured Materials and Their Investigation Using Advanced X-ray Scattering Techniques”, Physics Department, Lund University, 15– 28 January, 2017, Lund, Sweden.
11. “Nanostructured Materials From Self-Assembling Block Copolymers”, oral presentation, International Conference on Advanced Materials, 27 – 29 April, 2015, Irbid, Jordan.
12. “Test System for Through-Plane Conductivity Measurements of Hydrogen Proton Exchange Membranes”, poster presentation, International Conference on Advanced Materials, 27 – 29 April, 2015, Irbid, Jordan.

13. “Nanostructured Materials Using Self-Assembling Block Copolymers“, oral presentation, Leibniz-Institut für Polymerforschung Dresden e. V., Dresden, Germany, February, 2014.
14. “Development of Membrane Test Cell for Hydrogen Proton Exchange Fuel Cell“, poster presentation, 3rd Advances in Applied Physics and Materials Science Congress, 24 – 28 April, 2013, Antalya, Turkey.
15. “Polymer Crystallization: Fundamentals, theories and models“, invited lecture, E13 Summer School, 12 – 15 June 2012, Rudolfshütte, Austria.
16. “Discotic Hexabenzocoronene/Perylene Diimide Bulk-Heterjunction Photovoltaic Devices“, oral and poster presentation, 5th internal biennial science meeting of the FRM II, 6 – 9 June, 2011, Burg Rothenfels am Main, Germany.
17. “Structural Study of the Active Layer of Discotic Hexabenzocoronene/Perylene Diimide Bulk-Heterjunction Photovoltaic Devices“, poster presentation, 3rd Annual International Workshop on Advanced Materials (IWAM), 20 – 22 February, 2011, Ras Al Khaimah, United Arab Emirates.
18. “Investigating the Nano-ordering in Conjugated-coil Diblock Copolymer Films Having a Thickness Gradient“, poster presentation, The 11th Euroasia Conference on Chemical Sciences, 6 – 10 October 2010, The Dead Sea, Jordan.
19. “Nanomaterials Using Self-assembling Systems“, invited talk, The 14th Jordanian Science Week, 3 – 6 May 2009, Amman, Jordan.
20. “Nanoordering in Conjugated-Coil Diblock Copolymers“, poster presentation, The 2008 MRS Fall Meeting, 2 – 5 December 2008, Boston, USA.
21. “Nanostructures Using Self-assembling Block Copolymers“, oral presentation, The Nanotechnology Conference, 10 – 13 November 2008, Amman, Jordan.
22. “Investigating Nanoscopic Patterened Surfaces Using X-ray Scattering Techniques“, invited talk, The EuroMed Nanomaterials Brokerage Event, 11 – 13 January 2008, Sharm ElSheik, Egypt.
23. “Preparing and investigating nanopatterned surfaces using self-assembling liquid crystalline diblock copolymers“, oral presentation, First Sharjah International Conference on Nanotechnology and Its Applications, 10-12 April, 2007
24. “Small- and Wide-angle X-ray Scattering Beamline at SESAME“, oral presentation, The 6th SESAME Users’ Meeting, 17 – 19 November 2007, Amman, Jordan.
25. “Nanosopic ordering of a semifluorinated liquid crystalline diblock copolymer“, poster presented at the Faraday Discussion 128 : Self-Organising Polymers, Leeds, UK, July 2004.

26. "Ordering in amorphous liquid crystalline block copolymers", poster presented at the 298. WE-Heraeus Seminar (New Approaches and Perspectives in Polymer Physics), Bad Honnef, Germany, April 2003.
27. "Ordering of amorphous liquid crystalline diblock copolymers in thin films, poster presented at the EPF 2nd Summer School (Nanostructured Polymer Materials), Gargnano (BS), Italy, May 2003. "Ordering induced by crystallization in polystyrene polyethylene oxide metallo supramolecular diblock copolymer, poster presented at the European Discussion Meeting on Polymer Physics, Waldau, Germany, September 2003.
29. "Melt morphology of polystyrene polyethylene oxide metallo supramolecular diblock copolymer", poster presented at Jülich Soft Matter Days, Kerkrade, Netherlands, November 2003.
30. On the mechanisms of recrystallization after melting in semicrystalline polymers: The effect of the initial melt state, poster presented at the international symposium on polymer crystallization, Mishima, Japan, June 2002.
31. "On the mechanisms of recrystallization after melting in sPP and iPS", poster presented at the 263. WE-Heraeus Seminar (New Approaches in Polymer Crystallization: Concepts and Analogies to Related Areas), Waldau, Germany, October 2001.
32. "A SAXS study of the cold isothermal crystallization and the melting behaviour of isotactic polystyrene)", invited talk, the 6th Arab International Conference On Polymer Science & Technology, Sharm El-Shikh, Egypt, September 2001.
33. "Two different mechanisms of recrystallization after melting found in comparative SAXS studies of sPP and iPS", oral presentation at the 2nd Meeting of the COST P1 Working Group 6: Polymer Crystallization, Vaught, The Netherlands, December 2000.
34. "Modelling the Mechanical Properties of Semicrystalline Polymers of Oriented Lamellar Structure", oral presentation at the 19th Biennial Meeting, University of Sheffield, UK, September 1999.