

Name: Prof. Ana Dotan

Date: 25/10/20

## **CURRICULUM VITAE**

### **1. PERSONAL DETAILS**

Electronic Address: [adotan@shenkar.ac.il](mailto:adotan@shenkar.ac.il)

### **2. HIGHER EDUCATION**

#### **Undergraduate and Graduate Studies**

<b>Period of Study</b>	<b>Name of Institution and Department</b>	<b>Degree</b>	<b>Year of Approval of Degree</b>
1981-1984	Shenkar College of Textile Technology and Fashion Israel Textile Chemistry Department	B.Tc	1985
1991-1992	Instituto Tecnológico Aeroespacial Brazil Materials Engineering and Processing Department – Mechanical-Aeronautical Division	M.Sc.	1992
1993-1997	Instituto Tecnológico Aeroespacial Brazil Materials Engineering and Processing Department – Mechanical-Aeronautical Division	DSc	1997

### **3. SCHOLARLY POSITIONS AND ACTIVITIES OUTSIDE THE INSTITUTION**

- 2009 Head of Israel Standards Institute experts committee for "Biodegradable and Compostable Plastics" Standard IS 6018 (2009).
- 2009 Head of organizing committee of the 38th Annual Meeting of the Israel Polymers and Plastics Society, Tel Aviv, 8/12/09.
- 2010 Member of Israel Standards Institute experts committee for "Plastics Bags" standard.
- 2011 Research Proposal Reviewer for MOST Israel - ITALY 2011
- 2011 Head of Israel Standards Institute experts committee for "Standard Test Methods for Determining the Bio-based Content of Polymers".
- 2012 President of the "Israel Polymers and Plastic Society" for the years 2012-2013.
- 2014 Organizing committee and chair of the Europe-Africa PPS Conference, 19-23/10/14, Tel Aviv, Israel.
- 2014 Israel (MC) Member of COST (European Cooperation in Science and Technology) Action MP1105: Sustainable flame retardancy for textiles and related materials based on nanoparticles substituting conventional chemicals (2014-2015).
- 2014 Israel (MC) Member of COST Action FP1306: Valorisation of lignocellulosic biomass side streams for sustainable production of chemicals, materials & fuels using low environmental impact technologies (2014-2018).

Reviewer for the following journals: Langmuir, Journal of Applied Polymer Science, Journal of Adhesion Technologies, Cold Regions Science and Technology, Biomacromolecules, Applied Surface Science.

#### 4. RESEARCH GRANTS

##### a. Grants Awarded

<b>Role in Research</b>	<b>Co-researchers</b>	<b>Topic</b>	<b>Funded by</b>	<b>Year</b>
Co-PI (Equal contribution)	A. Ophir, S. Kenig,	<i>Film Extrusion of Polyolefins-Organoclay Nanocomposites*</i>	Biennial research program on 'Flexible Polymer Nanocomposites'  Government Chief Scientist Office, Israel  Annual budget:  350K IS	2003
Co-PI (Equal contribution)	H. Dodiuk, A. Ophir	<i>Epoxy Adhesive System Modified with Nano-particles of POSS Hybrid Copolymers*</i>	Triennial research program MAFAT (the Ministry of Defense), Israel  Annual budget:  150K IS	2004
Co-PI (Equal contribution)	A. Ophir, H. Dodiuk	<i>Epoxy/organoclay Nanocomposite System of Optimal Stoichiometry Reinforced with GF*</i>	Triennial research program MAFAT (the Ministry of Defense), Israel  Annual budget:  250K IS	2004
Co-PI (Equal contribution)	Ophir, H. Dodiuk	<i>Epoxy Adhesive Systems Modified with Organoclays of Various Functional Surfactants*</i>	Triennial research program MAFAT (the Ministry of Defense), Israel.  Annual budget:  200K IS	2004
PI	A. Ophir	<i>Comprehensive Search on Biodegradable Polymers for Application in Irrigation Systems*</i>	NETAFIM, Israel  Annual budget:  400K IS	2004
PI	A. Ophir	<i>Surface Emulsion Coating and Additives to Reduce the</i>	NETAFIM, Israel	2004

		<i>Degradation rate of Films made of Biopolymer Blends**</i>	Annual budget: 400K IS	
PI	A. Ophir	<i>Study on the Biodegradation Behavior of Biodegradable Polymers and Blends Buried in Various Types of Soil – Wet and Dry*</i>	1 <sup>st</sup> year Triennial research program on ‘Biodegradable Polymers’ Government Chief Scientist Office, Israel.  Annual budget: 450K IS	2004
Co-PI (Equal contribution)	A. Dagan, A. Ophir	<i>Study on the Environmental Stability of Various Biodegradable Polymers under UV Exposure and Accelerated Destructive Test*</i>	2 <sup>nd</sup> year Triennial research program on ‘Biodegradable Polymers’ Government Chief Scientist Office, Israel  Annual budget: 450K IS	2005
Co-PI (Equal contribution)	A. Ophir, T. Efrat	<i>The Effect of Annealing and Uniaxial Stretching on Properties of PLA/Organoclay Composite*</i>	Research program on ‘Biodegradable Polymers’ Government Chief Scientist Office, Israel  Annual budget: 450K IS	2005
Co-PI (Equal contribution)	A. Ophir, M. Kovel	<i>Improve the Long Distance Light Conduction of Planar Flexible Wave Guide with Glass Micro-beads*</i>	Oree Inc., Israel  Annual budget: 400K IS	2005
PI	Amos Ophir	<i>Study the Effect of Incorporation Small Amount of Organoclays in Various Biodegradable Polymers on Their Hydrolytic and Enzymatic Degradation Mechanism*</i>	Biennial research program on ‘Biodegradable Polymers’ sponsored by the Government Chief Scientist Office, Israel  Annual budget:	2005

			400K IS	
PI	H. Dodiuk	<i>Bone Cement Development*</i>	Polydent, Israel Annual budget: 200K IS	2005
PI	E. Keisman	Polydicyclopentadiene: Properties and Applications*	Paltechnica, Israel Annual budget: 450K IS	2005
PI	N. Bak	<i>Polydicyclopentadiene for Ballistic Composites*</i>	Paltechnica, Israel Annual budget: 450K IS	2006
Co-PI (Equal contribution)	H. Dodiuk	<i>Ice Repellent Surfaces***</i>	MAFAT (the Ministry of Defense), Israel Annual budget: 150K IS	2006
PI	-	<i>Polymeric Ground Cover Material for Hyperspectral Remote Sensing*</i>	Barkal, Israel Annual budget: 300K IS	2006
PI	A. Ophir, A. Dagan	<i>Chemical and Physical Modifications of PLA Based Biopolymer Blends for Retardation the Rate of Biodegradation*</i>	3 <sup>rd</sup> yearTriennial research program on 'Biodegradable Polymers' Government Chief Scientist Office, Israel Annual budget: 350K IS	2006
PI	A. Ophir, A. Rozen	<i>Surface Protection Coating and Tailored Additive for Retardation the Rate of Biodegradation of Bio-polymer Blends**</i>	NETAFIM, Israel Annual budget: 350K IS	2006
PI	A. Ophir	<i>Anti-fog Seal-peel Lid Film of Polyester Containers used in MAP Food Packaging*</i>	Polygon, Israel Annual budget: 250K IS	2007

PI	A. Ophir, Y. Hirsh	<i>Developing of Acrylic Bone Cement Formula with Low Polymerization Exothermic Temperature Using DOE Method*</i>	Disc-O-Tech, Israel Annual budget: 300K IS	2007
PI	A. Ophir	<i>Thermochromic Effect of Vanadium Oxide Powder Particles and Sol-Gel in Polycarbonate*</i>	biennial research POLYGAL Industries, Israel Annual budget: 500K IS	2007
Co-PI (Equal contribution)	A. Ophir, N. Bak	<i>Solvent Barrier IBC Large Blow Molded Containers with Anti-static Surface Properties*</i>	PACHMAS Industries, Israel. Annual budget: 500K IS	2007
PI	A. Ophir	<i>Thermochromic-Effect Coating on Polycarbonate Sheet Surface based on Perculated Vanadium Oxide Nano-Particles*</i>	biennial research POLYGAL Industries, Israel Annual budget: 500K IS	2008
PI	A. Ophir	<i>Drip-Irrigation Piping made of Sustainable Bio-polymer Blends*</i>	MAGNETON Annual budget: 400K IS	2007-2009
PI	-	<i>Improvement of Dimensional Stability of UV Curing Optical Adhesives*</i>	MAFAT (the Ministry of Defense), Israel Annual budget: 250K IS	2009
PI	R. Zilberman,	<i>Development and preparation of Tissue Equivalent Material (TEM) Based on Polymeric Hydro-gels for Lab Model System in Thermal Ablation Research*</i>	Biosense-Webster, Israel Annual budget: 200K IS	2010
PI	A. Ophir	<i>Hot-melt Biodegradable Absorbable Bio-adhesive for Hernia Vascular Graft Fixation**</i>	MediZn, Israel Annual budget: 500K IS	2011
PI	-	<i>Biodegradable films for water pouches with high moisture and oxygen barrier**</i>	TIPA corp., Israel Annual budget:	2012

			300K IS	
Co-PI (Equal contribution)	A. Ophir, S. Kenig	<i>Smart Packaging for Food and Drugs- P<sup>3</sup>***</i>  <i>The Effect of Layer Silicate Nano Particles on the Thermal Resistance and Controlled Migration of Essential Oil Incorporated into Polyolefins</i>	5 year program of MAGNET  Annual budget: 400K IS	2012-2016
PI	-	<i>Reinforcement of Polyolefins with Agricultural Waste (rice, corn, peanuts, almonds husks)*</i>	Government Chief Scientist Office, Israel  Annual budget: 500K IS	2012
PI	I.Kellerstein	<i>Chemical Surface Modification of Wheat Straw Fibers for Polypropylene Reinforcement***</i>	Government Chief Scientist Office, Israel  Annual budget: 500K IS	2013
Co-PI (Equal contribution)	H. Dodiuk, T. Nahum	<i>Photoreactive Hybrid Silica Nanoparticles for Durable Superhydrophobic Surfaces***</i>	MAFAT (the Ministry of Defense), Israel.  Annual budget: 200K IS	2013
Co-PI (Equal contribution)	H. Dodiuk, N. Cohen	<i>Durable Superhydrophobic and Ice Repellent Surfaces*</i>	MAFAT (the Ministry of Defense), Israel  Annual budget: 250K IS	2014
PI		<i>Antibacterial Polyethylene Pipes for Irrigation and Wastewater Disposal*</i>	Biennial Government Chief Scientist Office, Israel  Annual budget: 600K IS	2014-2015
PI	I.Kellerstein	<i>Wheat Straw Fibers Grafted with Polycaprolactone and Polylactic Acid For Polylactic Acid Reinforcement***</i>	Government Chief Scientist Office, Israel  Annual budget: 500K IS	2014

PI		<i>Preparation of wheat straw fibers using steam explosion and silane grafting for WPC industry</i>	Government Chief Scientist Office, Israel Annual budget: 600K IS	2015
PI	D. Lewitus	<i>Novel online dyeing process for PET fibers**</i>	Twine Annual budget: 450K IS	2015-2017
PI	A. Ophir	<i>High VOC barrier membranes for buildings</i>	Government Chief Scientist Office, Israel Annual budget: 450K IS	2017
Co-PI	A.Ophir	<i>Active packaging to prolong freshness and color of meat products</i>	Government Chief Scientist Office, Israel Annual budget: 500K IS	2017-2018
PI	A.Ophir	<i>Natural Anti-root Herbicides for Dripping Irrigation Systems</i>	EUREKA	2017-2018
Co-PI	A.Ophir	<i>Breathable films for agricultural crops</i>	TAMA 350K	2017-2018
PI	A.Ophir	<i>Recycling Chipboard Waste from Furniture Industry (Rehitei Doron)</i>	Government Chief Scientist Office, Israel Annual budget: 400K	2018-2019
PI	A.Ophir	<i>Low thermal conductivity coatings for buildings(Nirlat)</i>	Government Chief Scientist Office, Israel Annual budget: 500K	2019
PI		<i>Recycling Agricultural wastes using natural compatibilizers</i>	Circle Consortium	2019-2022
PI		<i>Development of compounds based on styrene based copolymers using household wastes</i>	UBQ	2019-2020



PI		<i>Recycling polyamide fibers waste</i>	Nilit	2020
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\* Classified Report

\*\* Patent

\*\*\* Paper published

## **5. SCHOLARSHIP, AWARDS AND PRIZES**

- 1982 Distinction in studies – Shenkar
- 2012 Creativity and Innovation Award (Irit Rapaport Award) – Shenkar
- 2013 Environment and Sustainability Award (Jacob Rosen Award) – Shenkar
- 2016 Climate Launchpad 2016 Cleantech competition (Superhydrophobic coatings - Unfrozen) – 1<sup>st</sup> place in Israel competition and elected as one of the 15 finalists among 90 competitors at European Climate Launchpad Competition, Tallin, Estonia.

## **6. PROFESSIONAL EXPERIENCE**

- 2003-2014 Senior Researcher at Israel Plastics and Rubber Center – Shenkar's Branch
- 2014-present Head of Shenkar's Branch of Israel Plastics and Rubber Center

## **PUBLICATIONS**

### **A. Dissertations**

1. MSc Thesis: “Phase Transformations in Uranium-Molybdenum Alloys”, Instituto Tecnológico de Aeronautica (ITA), Brazil, 1992 (supervised by Dr. Carlos de Moura Neto, written in Portuguese).
2. DSc Thesis: “Carbon fibres roughness analysis and its influence on fibre-matrix interface in composites” Instituto Tecnológico de Aeronautica (ITA), Brazil, 1997 (Supervised by Prof. Hazim Ali Al-Qureshi, written in Portuguese).

### **B. Articles in Refereed Journals**

1. H. Dodiuk, S. Kenig, I. Belinsky, **A. Dotan**, A. Buchman, “Nanotailoring of epoxy adhesives by polyhedral-oligomeric-sil-sesquioxanes (POSS)”, International Journal of Adhesion and

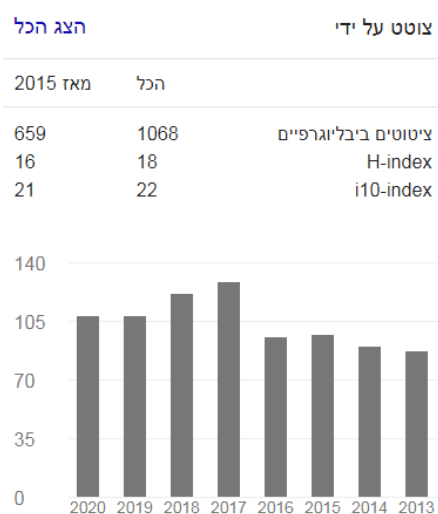
- Adhesives, 25, 211-218, (2005), (IF = 1.773) (CI = 66) (ISI: 108/258) (Equal contribution).
2. P.F.Rios, H.Dodiuk, S. Kenig, S. McCarty, **A.Dotan**, "The Effects of Nanostructure and Composition on Hydrophobic Properties of Solid Surfaces", Journal of Adhesion Science and Technology, Vol 20, No. 6, pp. 563-587, (2006), (IF = 0.961) (CI = 28) (ISI: 184/258) (Equal contribution).
  3. H.Dodiuk, I.Belinski, **A.Dotan**, S.Kenig, "Polyurethane Adhesives Containing Functionalized Nanoclays", Journal of Adhesion Science and Technology, Vol. 20, No. 12, pp. 1345-1355, (2006), (IF = 0.96) (CI = 21) (ISI: 184/258) (Equal contribution).
  4. P.F.Rios, H.Dodiuk, S. Kenig, S. McCarty, **A.Dotan**, "The Effect of Polymer Surface and Adhesion of Liquid Systems", Journal of Adhesion Science and Technology, Vol 21, No. 3-4, pp.227-241, (2007), (IF = 0.96) (CI = 32) (ISI: 184/258) (CoPI).
  5. P.F.Rios, H.Dodiuk, S. Kenig, S. McCarty, **A.Dotan**, "Transparent Ultrahydrophobic Surfaces", Journal of Adhesion Science and Technology, Vol 21, No. 5-6, pp.399-408, (2007), (IF = 0.96) (CI = 27) (ISI: 184/258) (CoPI).
  6. H.Dodiuk, P.F.Rios, **A.Dotan**, S.Kenig, "Hydrophobic and self-cleaning coatings", Polymers for Advanced Technologies, Vol 18, pp.746-750, (2007), (IF = 1.768) (CI = 48) (ISI: 36/82) (CoPI).
  7. H. Eshel, L. Dahan, **A. Dotan** , H. Dodiuk, S. Kenig, "Nanotailoring of Nanocomposite Hydrogels Containing POSS", Polymer Bulletin, Volume 61, Number 2 (2008), (IF = 1.438) (ISI: 48/82) (CI = 13) (PI).
  8. P. F. Rios, H. Dodiuk, S. Kenig, S. McCarthy, **A. Dotan**, " Durable ultra-hydrophobic surfaces for self-cleaning applications", Polymers for Advanced Technologies, Volume 19, Issue 11, pages 1684–1691, (2008), (IF = 1.768) (CI = 34) (ISI: 48/82) (CoPI).
  9. **A.Dotan**, H.Dodiuk, S.Kenig, C.Lafforte," The relationship between water wetting and ice-adhesion", Journal of Adhesion Science and Technology, 23, 1907–1915, (2009), (IF = 0.96) (CI = 65) (ISI: 184/258) (PI).
  10. A.Ophir, **A. Dotan**, I.Belinsky, S.Kenig, "Barrier and Mechanical properties of Nanocomposites Based on Polymer Blends and Organoclays", Journal of Applied Polymer Science,

Vol. 116, 72–83 (2010) (IF = 1.768) (CI = 10) (ISI: 35/82)  
(CoPI).

11. A. Buchman, H. Dodiuk-Kenig, **A. Dotan**, R. Tenne and S. Kenig, "Toughening of Epoxy Adhesives by Nanoparticles" *Journal of Adhesion Science and Technology*, 23, 753–768, (2009), (IF = 1.09) (CI = 26) (ISI: 108/258) (Equal contribution).
12. E. Cohen, O. Binshtok, **A. Dotan** and H. Dodiuk, "Prospective Materials for Biodegradable and/or Bio-based Pressure-Sensitive Adhesives: A Review", *Journal of Adhesion Science and Technology*; 27(18-19), (2012), (IF = 0.96) (ISI: 184/258) (CI = 3) (PI).
13. H. Dodiuk, S. Kenig and **A. Dotan**, "Do Self-cleaning Surfaces Repel Ice?", *Journal of Adhesion Science and Technology* 26, 701–714, (2012), (IF = 0.96) (CI = 15) (ISI: 184/258) (Equal contribution).
14. S. Simcha, **A. Dotan**, S. Kenig and H. Dodiuk, "Characterization of Hybrid Epoxy Nanocomposite", *Nanomaterials*, 2, 348-365, (2012), (IF = 2.076) (CI = 2) (ISI: 83/258) (PI).
15. R. Efrati, M. Natan, A. Pelah, A. Haberer, E. Banin, **A. Dotan**, and A. Ophir, "The combined effect of additives and processing on the thermal stability and controlled release of essential oils in antimicrobial films", *Journal of Applied Polymer Science*, Volume 131, Issue 15, (2014), (IF = 1.768) (CI = 1) (ISI: 35/82) (Equal contribution).
16. R. Efrati, M. Natan, A. Pelah, A. Haberer, E. Banin, **A. Dotan**, and A. Ophir, "The effect of polyethylene crystallinity and polarity on thermal stability and controlled release of essential oils in antimicrobial films", *Journal of Applied Polymer Science*, Volume 131, Issue 11, (2014), (IF = 1.768) (ISI: 35/82) (Equal contribution).
17. T. Nahum, H. Dodiuk, **A. Dotan**, S. Kenig, and J.P. Lellouche, "Durable bonding of silica nanoparticles to polymers by photoradiation for control of surface properties", *Polymers for Advanced Technologies*, Volume 25, Issue 7, pages 723-731, (2014), (IF = 1.768) (ISI: 36/82) (Equal contribution).
18. T. Nahum, H. Dodiuk, **A. Dotan**, S. Kenig, and J.P. Lellouche, "Superhydrophobic durable coating based on UV-photoreactive silica nanoparticles", *Journal of Applied Polymer Science*, Volume 131, Issue 23, (2014), (IF = 1.768) (ISI: 35/82) (Equal contribution).

19. I. Kellerstein, **A. Dotan**, "Chemical Surface Modification of Wheat Straw Fibers for Polypropylene Reinforcement", *Polymer Composites*, (2015), DOI 10.1002/pc.23392, (IF = 2.324) (ISI: 7/24) (PI).
20. N. Cohen, **A. Dotan**, H. Dodiuk, S. Kenig, "Superhydrophobic Coatings and Their Durability", *Materials and Manufacturing Processes*, Taylor & Francis, DOI:10.1080/10426914.2015.1090600, (2015) (IF = 1.63) (ISI: no data yet) (Equal contribution).
21. I. Kellerstein, E. Amir, **A. Dotan**, "Grafting of Wheat Straw Fibers with Poly ( $\epsilon$ -caprolactone) via Ring-Opening Polymerization for Poly (lactic acid) Reinforcement", *Polymers for Advanced Technologies*, Springer, DOI: 10.1002/pat.3736, (2015) (IF = 1.823) (ISI: 36/82) (PI).
22. E. Moshe, M. Natan, A. Pelah, A. Haberer, E. Banin, **A. Dotan**, and A. Ophir, "Multiphase Thermoplastic Hybrid for Controlled Release of Antimicrobial Essential Oils in Active Packaging Film", *Polymers for Advanced Technologies*, Springer, *doi*: 10.1002/pat.3817, (2016) (IF = 1.823) (ISI: 36/82) (Equal contribution).
23. O. Weizman, **A. Dotan**, Y. Nir, and A. Ophir, "Modified Whey protein coatings for improved gas barrier properties of biodegradable films", *Polymers for Advanced Technologies*, Springer, DOI: 10.1002/pat.3882, (2016) (IF = 1.823) (ISI: 36/82) (Equal contribution).
24. N. Cohen, **A. Dotan**, H. Dodiuk, and S. Kenig, "The Thermo-Mechanical Mechanisms of Reducing Ice Adhesion on Superhydrophobic Surfaces", *Langmuir*, DOI: 10.1021/acs.langmuir.6b02495, (2016) (IF = 3.993) (ISI: 2/113), (Equal contribution).
25. I. Kellersztein, U. Shani, I. Zilber, **A. Dotan**, Sustainable Composites from Agricultural Waste: The Use of Steam Explosion and Surface Modification to Potentialize the use of Wheat Straw Fibers for Wood Plastic Composite Industry, *Polymer Composites*, DOI: 10.1002/pc.24472, (2017), (IF = 2.324) (ISI: 7/24) (PI).
26. S. Czyzyk, **A. Dotan**, H. Dodiuk, S. Kenig, "Easy-to-clean superhydrophobic coatings based on sol-gel technology: A critical review", *Reviews of Adhesion and Adhesives*, Volume 5, Number 4, (2017), pp. 325-327.

27. E.M. Dvir, O. Weizman, D. Lewitus, S. Weintraub, A. Ophir and **A. Dotan**, "Antimicrobial active packaging combining essential oils mixture: Migration and odor control study", <https://doi.org/10.1002/pat.4642>, (2019), Polymers for Advanced Technologies, Springer, (IF = 1.823) (ISI: 36/82) (Equal contribution).
28. S. Czyzyk, **A. Dotan**, H. Dodiuk, S. Kenig, "Processing effects on the kinetics morphology and properties of hybrid sol-gel", Progress in Organic Coatings, (2020).
29. S. Roisman, **A. Dotan**, D. Lewitus, " Polycaprolactone-based hotmelt adhesive for hernia-mesh fixation", DOI: 10.1002/pat.5044, (2020), Polymers for Advanced Technologies, Springer, (IF = 1.823) (ISI: 36/82) (Equal contribution).
30. H. Monder, L. Bielenki, H. Dodiuk, **A. Dotan** and S. Kenig "Poly (Dimethylsiloxane) Coating for Repellency of Polar and Non-Polar Liquids", Polymers 2020, 12, 2423; doi:10.3390/polym121024231.



(Google Scholar data from 25/10/20)

### C. Book Chapters

1. **A. Dotan**, "Thermosets from Renewable Sources", Handbook of Thermoset Plastics, 3rd Edition, Elsevier, 2013.
2. H. Dodiuk, S. Kenig and **A. Dotan**, "The Effects of Nanostructure and Composition of Solid Surfaces on Ice Adhesion", Recent Advances in

Adhesion Science and Technology (in Honor of Dr. Kash Mittal), CRC Press, 2014 (Equal contribution).

#### **D. Patents**

1. N. Elimelech, **A. Dotan** and A. Ophir, "Bio-adhesive Composition and Device for Repairing Tissue Damage", US 2014/0147472 A1 (2014) (PI).
2. **A. Dotan**, T. Neuman, D. Nissembaum, "Biodegradable sheets and array of separable pouches for liquids", WO/2011/158240 A2, 2011.
3. A. Ophir, **A. Dotan**, A. Pelah, G. Hakim and G. Roter, "Temperature Responsive Glazing Plate", US Patent 901109 PCT WO 2010/134071 A1, 2010 (Equal contribution).
4. A. Ophir, **A. Dotan** and T. Yankovitz, "Biodegradable Irrigation Pipe", US Patent 901109 PCT/IL2008000193, 2009 (PI).
5. A. Ophir, R. Efrati, **A. Dotan** and S. Kenig "Methods for thermal stabilization and controlled diffusion of E. Oils in antimicrobial polymer films made by melt extrusion for use as 'active' packaging for fresh produce foods", US Patent PCT, 2013 (Equal contribution).
6. A. Ophir, **A. Dotan** and S. Kenig "Methods for introducing and control diffusion of E. Oils in antimicrobial polymer coatings applied by 'cold' processes on plastic films, non-woven fabrics or paper board, for use as 'active' packaging for fresh produced foods", US Patent PCT, 2013 (Equal contribution).
7. H. Dodiuk, **A. Dotan**, **N. Cohen** and S. Kenig, " DURABLE SUPERHYDROPHOBIC COATING", WO/2019/162723 - PCT/IB2018/051090, 2018.
8. S. Alkaher, D. Lewitus, A. Ophir, **A.L. Dotan**, Y.I. LIPOVSKY, "Method and system for delivering biodegradable shelled portions", US Patent App. 15/632,872.
9. I. Mor, A. Moshe, **A. Dotan**, D. Lewitus, Y. Roth, G. Gotesman, N. Sidelman, Twine Solutions Ltd., IL256062, 2017.

#### **E. Summary of my Activities and Future Plans**

I consider myself a multidisciplinary researcher with different fields of interest in distinct polymer science and engineering areas. A list of the important fields and on-going researches can be seen as follows:

- Superhydrophobic and icephobic surfaces:
  - o In the last years I've been engaged in research regarding the development and improvement of the durability of superhydrophobic/icephobic coatings. Two relevant papers were published in this subject (18 and 19) where the main purpose was

covalently bind chemically modified nanoparticles to the coating matrix using distinct methodologies.

- Biodegradable and biobased polymers:

- My researches in this field are focused in two subjects: (1) the improvement of barrier to gases using modified whey protein based coatings (a paper was submitted recently to publication with latest results) and (2) biocomposites based on biodegradable matrices reinforced with chemically modified cellulose from agricultural wastes.

- Biological Adhesives:

- I've been developing a unique biological adhesive biocomposite for hernia meshes, activated on demand by thermal energy (Patent 2). The research is now focusing the optimization of the process parameters through the chemistry of the adhesive component.

- Active packaging materials

- For the last four years (P<sup>3</sup> Smart Packaging Consortium) I've been engaged in the development of antimicrobial active packaging using natural essential oils. The research focused the following:
  - The combined effect of additives and processing on the thermal stability and controlled release of the essential oils in antimicrobial films; and
  - The effect of polyethylene crystallinity and polarity on thermal stability and controlled release of essential oils in antimicrobial films.
- For the last year the I've been focusing on:
  - The development of controlled release antimicrobial films based on polyamide/polyethylene blends.
  - The reduction of organoleptic effects of essential oils.
  - Recycling Agricultural wastes using natural compatibilizers