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Curriculum Vitae Tsachi Livneh

Personal Details

Tsachi Livneh, 1963
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Education

1987-1990 B.Sc. in Chemistry, *cum laude*
The Hebrew University of Jerusalem
1991-1997 Ph.D. in Physical Chemistry
The Hebrew University of Jerusalem
Advisor: Prof. Micha Asscher
Title: "The Photo and Thermal Chemistry of Molecules Adsorbed on
Well-Defined Surfaces".

Employment History

1991-1996 Teaching Assistant, Physical Chemistry Dep., The Hebrew University
1997-2006 Researcher, Physical Chemistry Dep., NRCN, Israel
Recipient of the "Katzir" Scholarship.
2007-2011 Head of "Chemical-Physics of surfaces" group, Physics Dep., NRCN, Israel
2009 -2017 Senior Researcher, Physics Dep., NRCN, Israel
11/2017- A+ rank Senior Researcher

Sabbaticals

8/2003-8/2004 Visiting Scientist, Chemistry Dep. University of California Santa Barbara
6/2011-10/2011 Visiting Prof., Materials Engineering Dep. Drexel University, Philadelphia
10/2011-2/2012 Visiting scientist, Materials and Interfaces Dep., The Weizmann institute, Israel
10/2018-10/2019 Visiting scientist, Materials and Interfaces Dep., The Weizmann institute, Israel

Scientific Publications

1. L.Romm, [T. Livneh](#) and M. Asscher "Collision induced desorption of water on Ru (001) ", *J. Chem. Soc. Faraday T.* **1995**, 91, 3655.
2. [T. Livneh](#), L. Romm and M. Asscher "Cage formation of N₂ under overlayers of water on Ru (001)", *Surf. Sci.* **1996**, 351, 250.
3. [T. Livneh](#) and M. Asscher "Work- function study of adsorption, lateral repulsion and fragmentation of CH₃Br on Ru(001)" *J. Phys. Chem. B* **1997**, 101, 7505.
4. [T. Livneh](#) and M. Asscher "The chemistry of CH₃Cl and CH₃Br on Ru(001)", *Langmuir* **1998**, 14, 1348.

5. T. Livneh and M. Asscher " The surface chemistry of CH₃Br and methyl, modified by copper deposition on Ru(001)", *J. Phys. Chem. B* **1999**, 103, 5665.
6. T. Livneh, Y. Lilach and M. Asscher " Dipole-dipole interactions among CH₃Cl molecules on Ru(001): Correlation between work-function change and thermal desorption studies ", *J. Chem. Phys.* **1999**, 111(24), 11138.
7. T. Livneh and M. Asscher " The adsorption and decomposition of C₂H₄ on Ru(001): A combined TPR and $\Delta\Phi$ study", *J. Phys. Chem. B* **2000**, 104, 3355.
8. T. Livneh, E. Bar-Ziv, P. Salatino, O. Seneca "Evolution of reactivity of highly porous chars from Raman microscopy" *Combust. Sci. Technol.* **2000**, 153, 65.
9. G. Gal, S. Sgulim and T. Livneh "Polar angle velocity distribution of ground level atomic silicon in the laser ablated silica plume", *J. Appl. Phys.* **2001**, 89(3), 1927.
10. Y. Lilach, L. Romm, T. Livneh and M. Asscher, "The first Layers of water on Ru(001)", *J. Phys. Chem. B* **2001**, 105, 2736.
11. Z. Chernia, T. Livneh, I. Pri-Bar and Y. Koresh "Mode assignment of linear phenyl acetylene sequence: phenyl acetylene, di-Phenyl acetylene and 1,4-di(phenylethynyl) benzene", *Vib. Spectrosc.* **2001**, 25(2), 119.
12. T. Livneh, A. Band. and R. Tenne "Raman scattering from peroxide ion on Cs₂O₂" *J. Raman Spectrosc.* **2002**, 33, 67.
13. T. Livneh, T.L. Haslett and M. Moskovits "Distinguishing disorder- induced from allowed Raman bands in graphite", *Phys. Rev. B* **2002**, 66 (19), 195110.
14. T. Livneh and M. Moskovits "Surface enhanced Raman Spectroscopy of carbon nanotubes deposited on colloidal silver self-affine fractal surface", *J. Appl. Phys.* **2002**, 92, 3517.
15. T. Livneh and M. Asscher "Photoinduced fragmentation of multilayer CH₃Br on Cu/Ru (001) surface.", *J. Phys. Chem. B* **2003**, 107, 11382.
16. A. Band, A. Albu-Yaron, T. Livneh, H. Cohen, Y. Feldman, L. Shimon, R. Popovitz-Biro, V. Lyahovitskaya and R. Tenne "Characterization of oxides of cesium" *J. Phys. Chem. B* **2004**, 108, 12360.
17. Y. Wu, T. Livneh, Y. X Zhang, G.S Cheng, J.F Wang, J. Tang, M. Moskovits, and G.D Stucky" Templated synthesis of highly ordered mesostructured nanowires and nanowire arrays" *Nano Let.* **2004**, 4, 2337.
18. T. Livneh and E. Sterer, "The effect of pressure on the multiphonon Raman scattering in UO₂" *Phys. Rev. B* **2006**, 73, 085118.
19. T. Livneh, J.P. Zhang, G.S. Cheng and M. Moskovits "Polarized Raman scattering from single GaN nanowires" *Phys. Rev. B* **2006**, 74, 035320.
20. M. Moskovits, D-H Jeong, T. Livneh, Y. Wu and G.D. Stucky "Engineering nanostructures for single-molecule Surface-Enhanced Raman spectroscopy" *Isr. J. Chem.* **2006**, 46, 283.
21. G. Shemer, E. Tirosh, T. Livneh and G. Markovich "Tuning a colloidal synthesis to control Co⁺² doping in ferrite nanocrystals" *J. Phys. Chem. C* **2007**, 111, 14334.
22. T. Livneh "Coupling of LO phonons to crystal-field excitations in UO₂ studied by Raman spectroscopy", *J. Phys- Condens. Mat.* **2008**, 20, 085202.
23. G. Benamar, D. Schweke, J. Bloch, T. Livneh and M.H. Mintz "The very initial stage of hydride formation on polycrystalline gadolinium" *J. Alloys Compd.* **2008**, 477, 188.
24. D. Avisar and T. Livneh "Raman scattering by phonons and crystal-field excitations in cerium hydrides" *J. Alloys Compd.* **2010**, 494, 11.
25. T. Livneh and E. Sterer "Resonant Raman scattering at exciton states tuned by pressure and temperature in 2H-MoS₂" *Phys. Rev. B* **2010**, 81, 195209.
26. G. Benamar, D. Schweke, N. Shamir, S. Zalkind, T. Livneh, A. Danon, G. Kimmel and M.H. Mintz" Heat pretreatment-induced activation of gadolinium surfaces towards the initial precipitation of hydrides" *J. Alloys Compd.* **2010**, 498, 26.

27. N. Shamir, D. Schweke, A. Rubin, T. Livneh and S. Zalkind “Carbon enhanced hydriding of oxidized U-0.1w%Cr surfaces” *Mater. Sci. Eng.* **2010**, 9, 012037.
28. T. Livneh, Y. Lilach, I. Popov, A. Kolmakov and M. Moskovits” Polarized Raman from a single segmented SnO₂ wire” *J. Phys. Chem. C* **2011**, 115, 17270.
29. D. Schweke, H. Maimon, Z. Chernia and T. Livneh,” Monitoring the *in-situ* oxide growth on uranium by UV-Visible reflectance spectroscopy” *J. Appl. Phys.* **2012**, 112, 093104.
30. Y. Tsverin, T. Livneh, R. Rosentsveig, A. Zak I. Pinkas and R. Tenne “Photocatalysis with hybrid Co- coated WS₂ nanotubes “*Nanomater. Energy* **2012**, 2(1), 25.
31. O. Noked, A. Malchior, R. Shuker, T. Livneh, R. Steininger, B.J. Kennedy and E. Sterer “Pressure induced amorphization of La_{1/3}TaO₃” *J. Solid State Chem.* **2013**, 202, 38.
32. G. Chen, G. Sun, Y.J. Ding, P. Prete, I. Miccoli, N. Lovergine, H. Shtrikman, P. Kung, T. Livneh, and J. E. Spanier” Direct measurement of band edge discontinuity in individual core-shell nanowires by photocurrent spectroscopy” *Nano Let.* **2013**, 13, 4152.
33. H. Manis-Levy, T. Livneh, I. Zukerman, M.H. Mintz and A. Raveh “ Effect of radio-frequency and low-frequency bias voltage on the formation of amorphous carbon films deposited by plasma enhanced CVD“ *Plasma Sci. Technol.* **2014**, 16, 254.
34. T. Livneh and J. E. Spanier “A comprehensive multiphonon spectral analysis in MoS₂” *2D Mater.* **2015**, 2, 035003.
35. D. Avisar and T. Livneh “Raman scattering of A-type Ce₂O₃” *Vib. Spectrosc.* **2016**, 86, 14.
36. S. Zalkind, G. Rafailov, I. Halevy, T. Livneh, A. Rubin, H. Maimon, D. Schweke “Uranium oxidation kinetics monitored by *in-Situ* X-Ray diffraction” *J. Nuc. Mater.* **2017**, 485, 202.
37. T. Livneh, D. O. Dumcenco and I. Pinkas “Determining alloy composition in Mo_xW_(1-x)S₂ from low wavenumber Raman spectroscopy” *J. Raman Spectrosc.* **2017**, 48(5), 773.
38. O. Kraynis, E. Wachtel., I. Lubomirsky and T. Livneh “Inelastic relaxation in Gd-doped ceria films: micro-Raman spectroscopy”, *Script. Mater.* **2017**, 137, 123.
39. Grinberg O., Avrahami R., Zussman E., T. Livneh and Zak A. “Raman scattering from single WS₂ nanotubes embedded within stretched PVDF electrospun fibers”, *Phys. Chem. Chem. Phys.* **2017**, 19,18443.
40. T. Livneh, S. Reparaz and A. Goñi “Low temperature resonant Raman asymmetry scattering in 2H-MoS₂ under high pressure”, *J. Phys- Condens. Mat.* **2017**, 29, 435702.
41. O. Kraynis, E. Makagon, E. Mishuk, M. Hartstein, E. Wachtel., I. Lubomirsky and T. Livneh “Suitability of Raman spectroscopy for assessing anisotropic strain in thin films of doped ceria”, *Adv. Funct. Mater.* **2019**, 1804433.
42. O. Kraynis, I. Lubomirsky and T. Livneh “Resonant Raman scattering in undoped and lanthanide-doped CeO₂” *J. Phys. Chem. C* **2019**, 123, 24111.
43. P. Chithaiah, S. Ghosh, A. Idelevich, L. Rovinsky, T. Livneh, and A. Zak “Solving the “MoS₂ nanotubes” synthetic enigma and elucidating the route for their catalyst-free and scalable production” *ACS Nano* **2020**, 14, 3004.
44. T. M. Brenner, C. Gehrman, R. Korobko, T. Livneh, D. A. Egger and O. Yaffe “Anharmonic host lattice dynamics enable fast ion conduction in superionic AgI” *Phys. Rev. Materials* **2020**, 4, 115402.
45. T. Livneh and D. Avisar “Raman microscopy study of cerium hydride growth centers, overlayers by hydrogen-incorporated thin oxide overlayer” *J. Phys. Chem. C* **2020**, 124, 28018.
46. T. Livneh “Resonant Raman scattering in UO₂ revisited “*Phys. Rev. B* **2022**, 105, 045115.
47. D. Schweke, A. Rubin, L. Rabinovitch, O. Kraynis and T. Livneh “Cerium metal oxidation studied by IR reflection-absorption and Raman scattering spectroscopies”, *J. Phys- Condens. Mat.* **2022**, *in press*.

Conference Presentations - last 14 years

Metal-Hydrogen systems MH2008, Reykjavic, Iceland, 6/2008 (Oral)
The 75th Israel Chemical Society Conference, Tel-Aviv, 2/ 2009 (Oral)
The 1st JRC workshop, Ein-Geddi, Israel, 4/2010 (Oral)
High Pressure Semiconductor Physics Conference HPSP 14, Changchun, China, 8/2010 (Oral)
22th International Conference on Raman Spectroscopy ICORS Boston, USA, 9/2010 (Poster)
The 56th Israel Physical Society Conference, Tel Aviv, 12/2010 (Oral)
Transition Metal Chalcogenides Nanostructures TMCN 2012, Mianz, Germany, 7/2012 (Oral)
Flatlands beyond Graphene 2013, Bremen, Germany, 7/2013 (Oral)
Israel Vacuum Society IVS 2014, Herzeliya, 9/2014(Oral)
Winterschool on Electronic Properties of Novel Materials, Kirchberg, Austria, 3/2014 (poster)
The 44th Journess des Actinides, Ein-Geddi, Israel, 4/2014 (Oral)
Flatlands beyond Graphene 2014, Dublin, Ireland, 7/2014 (Oral)
Materials Research conference MRS 2014, Boston, 11/2014 (Invited talk)
Winterschool on Electronic Properties of Novel Materials, Kirchberg, Austria, 3/2015 (poster)
Flatlands beyond Graphene 2015, Bar Illan university, Israel, 6/2015 (Oral).
Graphene 2016, Genova, Italy, 4/2016 (Oral)
Flatlands beyond Graphene 2016, Bled, Slovenia, 7/2016 (Oral)
The 62th IVS Workshop on 2D materials, Rehovot, 9/2016 (Invited talk).
Actinides 2017, Sendai, Japan, 7/2017 (Oral)
Nanotubes 2017, Belo Horizonte, Brazil, 7/2017 (Oral)
Flatlands beyond Graphene 2017, Lausanne, Switzerland, 8/2017 (Oral)
The 25th Israel Vacuum Society Conference, Rehovot, 9/2017 (Session chair: Spectroscopy and Surface Science)
2nd workshop in Raman spectroscopy in AnO₂, Orleans, France, 12/17 (Oral)
The 4th Inter. Symp. for Nanotechnology (NATI), Holon, Israel, 5/2018 (Invited talk)
High Pressure Semiconductor Physics Conference HPSP 18, Barcelona, Spain ,7/2018 (Oral)
26th International Conference on Raman Spectroscopy ICORS Jeju, S. Korea, 10/2018 (Oral)
Winterschool on 2D materials, Weizmann Institute, Rehovot, Israel, 1/2019 (Invited talk)
Israel-Italy workshop on 2D materials, BIU, Israel 11/2019 (Invited talk)
The 19th Israel Materials Engineering Conference IMEC, Jerusalem, 12/2021 (2 posters)
The 51st Journess des Actinides, Santa Margarita, Italy, 4/2022 (Oral)
27th International Conference on Raman Spectroscopy ICORS, Los Angeles, USA (Oral), *to be held at 8/2022*

Grants

1998-2006 **Vatat** with Prof. Reshef Tenne - The Weizmann Institute of Science.
“Characterization of surfaces and of gas-solid interactions by Raman spectroscopy”.

2014-2018 **Pazy** with Prof. Igor Lubomirsky - The Weizmann Institute of Science
“Probing the effect of lanthanide doping on surface defects and bulk properties of ceria by Raman scattering spectroscopy”.

2019-2022 **Pazy** with Prof. Igor Lubomirsky - The Weizmann Institute of Science
“Raman spectroscopy of anelastic polycrystalline solids under anisotropic strain”.

Teaching

2014, 2019 “Raman scattering spectroscopy in solids” (2 points credit)
Feinberg graduate school, The Weizmann Institute of Science.

Thesis Supervision

David Avisar “Raman Spectroscopy of Cerium Hydrides and Oxides”
(co-supervising with Prof. Shlomo Efrima, Chemistry Department Ben-Gurion University, Negev). MSc. Thesis submitted in March 2005.

Shahar Aziza “Spectroscopic Characterization of Lanthanide Hydrides and Oxyhydrides” (co-supervising with Prof. Shmuel Hayun, Materials Engineering Department Ben-Gurion University, Negev). Ph.D. candidate, starting from 1/2018.

Professional Activities

Referee for:

Physical Review Letters

Physical Review B

Applied Physics Letters

Journal of Applied Physics

Journal of the American Chemical Society

The Journal of Physical Chemistry B, C

Nano Letters

Journal of Raman Spectroscopy

Journal of High-Pressure Research

Solid State Communications

Scientific Reports

Journal of Physics Communications

Materials Characterization

Journal of Nuclear Materials

Israel Journal of Chemistry

Israel Science Foundation