BIOGRAPHICAL SKETCH

(April, 2016)

NAME

Alexei A. Maradudin
Research Professor of Physics
University of California, Irvine

EDUCATION

			YEAR
B.S.	Physical Metallurgy	Stanford University	(1953)
M.S.	Physical Metallurgy	Stanford University	(1954)
Ph.D.	Physics	University of Bristol (U.K.)	(1957)

PROFESSIONAL EXPERIENCE/PREVIOUS EMPLOYMENT

2002-Present	Research Professor of Physics, University of California, Irvine
1965-2002	Professor of Physics, University of California, Irvine
1965-1971, 1982-1993	Consultant to Los Alamos National Laboratory
July 1960-June 1965	Member of the Research Staff, Westinghouse Research Laboratories Pittsburgh, Pennsylvania
July-September 1959	On leave to Theoretical Physics Group, General Motors Research Laboratories
July 1958-July 1960	Consultant to Semiconductor Branch, US Naval Research Laboratory
September 1958-June 1960	Assistant Research Professor, Institute for Fluid Dynamics and Applied Mathematics, University of Maryland.
September 1957-August 1958	Research Assistant Professor, Physics Department, University of Maryland
June 1957-September 1957	On leave to US Naval Ordnance Laboratory
September 1956-June 1957	Research Associate, Physics Department, University of Maryland

AWARDS AND HONORS

Phi Beta Kappa	(1953)
Tau Beta Pi	(1953)
Sigma Xi	(1953)
Marshall Scholar	(1954-1956)
Fellow, American Physical Society	(1963)
UCI Alumni Association Award for Distinguished Faculty Research	(1973)
UCI Alumni Association "Extraordinarius" Award	(1976)
Alexander von Humboldt U. S. Senior Scientist Awardee	(1980-1981)
Docteur (Honoris Causa) Université Pierre et Marie Curie, Paris	(1986)
Fellow, American Association for the Advancement of Science	(1993)
Elected to Commission B of URSI (the International Union for Radio Science)	(1993)
Resnick Lecturer, Bar-Ilan University, Israel	(1996)
Fellow, Optical Society of America	(1997)
Fellow, Institute of Physics (U.K.)	(1999)
Recipient of the award for Outstanding Contributions to Undergraduate Education in Physics and Astronomy at UCI	(2002)
Fellow, Electromagnetics Academy	(2007)
OSA Outstanding Reviewer Award	(2012)
APS Outstanding Referee Award	(2014)

PROFESSIONAL SERVICE

Associate Editor: Physics Reports	(1991-2007)
Associate Editor: Solid State Communications	(1969-1993)
Associate Editor: Physics Letters A	(1980-1991)
Divisional Associate Editor: Physical Review Letters	(1975-1978)
Associate Editor: J. Mathematical Physics	(1967-1969)
Member of the Editorial Board of Progress in Surface Science	(1985-1995)
Member of the Board of Advisory Editors of Optics Communications	(2000-2008)
Member of the Editorial Board of Waves in Random Media	(1991-present)

Member of the Editorial Board of Physical Review E (2005 – 2008)
Member of the Editorial Board of Physical Review A (2008 – 2013)
Member of the Editorial Board of Metamaterials (2007-2012)
Co-editor: Modern Problems of Condensed Matter Sciences, vols. 1-35 (North-Holland, Amsterdam)
Co-editor: Dynamical Problems of Solids, vols. 1-7 (North-Holland, Amsterdam)
Chair of the National Research Council Panel that wrote Condensed Matter Physics (National Academy Press, Washington D.C., 1986), as part of the Brinkman Report on Science in the U.S. in the 1980's and 1990's.
Member of the NSF Materials Research Advisory Committee (MRAC) (1984-1988)
Chair of MRAC (1986-1987)
Chair, California Section of the American Physical Society (2002-2004)
Organized Workshops on:
- Rough Surface Scattering and Related Phenomena, Yountville, CA (1996)
- Rough Surface Scattering and Related Phenomena, Yountville, CA (2000)
- Variable Coherence, Costa Mesa, CA (2004)
- Multiple Scattering and Partial Coherence, Costa Mesa, CA (2003)
- Aspects of Rough Surface Scattering Phenomena and Related Phenomena, Yountville, CA (2006)
- Waves in Complex Media, Yountville, CA (2009)

DEPARTMENT, CAMPUS, AND UNIVERSITY SERVICE

Chair, Department of Physics (1968-1971)
Acting Dean, School of Physical Sciences (1974)
Dean of Graduate Studies (1977-1980)
Chair of the UCI Academic Senate (1972-1973)
Vice Chair, Academic Senate of the University of California (1973-1974)
Chair, Academic Senate of the University of California (1974-1975)
Director, UCI Institute for Surface and Interface Science (1993-1996)
Chair, California Coordinating Committee for Nonlinear Science (1996-2001)

PUBLICATIONS (2005-Present)
Publications in Refereed Journals

412. Interference of a Pair of Symmetric Collett-Wolf Beams (with Zu-Han Gu, E. R. Méndez, M. Ciftan, and T. A. Leskova) Opt. Lett., **30**, 1605-1607 (2005).
413. Synthetic Spectra from Rough Surface Scattering (with T. A. Leskova) Opt. Lett. **30**, 2784-2786 (2005).
414. Transmission of light through a thin metal film with periodically and randomly corrugated surfaces (with B. Baumeier and T. A. Leskova) J. of Optics A **8**, S191-S207 (2006).
415. Synthetic spectra from rough surface scattering (with T. A. Leskova and W. Zierau) Waves in Random and Complex Media **16**, 531-544 (2006).
416. Control of the coherence of light scattered from a one-dimensional randomly rough surface that acts as a Schell-model source (with R. M. Fitzgerald and T. A. Leskova) J. Lumin. **125**, 147-155 (2007).
417. Design and Fabrication of random phase diffusers for extending the depth of focus (with E. E. Garcia-Guerrero, E. R. Méndez, H. M. Escamilla, and T. A. Leskova) Opt. Express **15**, 910-923 (2007).
418. Structured Surfaces as Optical Metamaterials (with T. A. Leskova, E. E. Garcia-Guerrero, and E. R. Méndez), Metamaterials **1**, 19-39 (2007).
419. Reconstruction of a 1-D Surface from Inverse Transmission (with A. Wang, T. A. Leskova, and Z.-H. Gu) J. Opt. Soc. Am. A**25**, 1722-1727 (2008).
420. Geometrical optics of dispersive media with turning points (with F. G. Bass and V. Freilikher) Waves in Random and Complex Media **18**, 541-549 (2008).
421. Surface Electromagnetic Waves on Two-dimensional Rough Perfectly Conducting Surfaces (with T.A. Leskova and I. Simonsen) Revista Mexicana de Fisica S **54**, 54-65 (2008).
422. Experimental and Theoretical Studies of Specular and Diffuse Scattering of Light from Randomly Rough Metal Surfaces (with A. G. Navarette Alcala, E. I. Chaikina, E. R. Méndez, and T. A. Leskova) Waves in Random and Complex Media **19**, 600-636 (2009).
423. The Talbot Effect for a Surface Plasmon Polariton (with T.A. Leskova) New J. Phys **II**, 033004 (1-9) (2009).

424. Optical Spectrum and Electromagenetic-Field Distribution at Double-Groove metallic surface gratings (with L.D. Wellems, D. Huang, and T.A. Leskova), J. Appl. Phys **106**, 053705 (1-8) (2009).
425. Cloaking from Surface Plasmon Polaritons by a Circular Array of Point Scatterers (with B. Baumeier and T.A. Leskova), Phys. Rev. Lett. **103**, 246803 (1-4) (2009).
426. The Scattering of Electromagnetic Waves from Two-Dimensional Randomly Rough Perfectly Conducting Surfaces: The Full Angular Intensity Distribution (with I. Simonsen and T.A. Leskova), Phys. Rev. A **81**, 013806 (1-13) (2010).
427. Transformation of Surface Plasmon Polaritons by Surface Structures (with T.A. Leskova), Physica B **405**, 2972-2977 (2010).
428. Interference of a Pair of Symmetric partially Coherent Beams (with E.E. Garcia-Guerrero, E.R. Mendez, Zu-Han Gu and T.A. Leskova), Opt. Express **18**, 4816-4828 (2010).
429. Scattering of Electromagnetic Waves from Two-dimensional Randomly Rough Penetrable Surfaces (with I. Simonsen and T.A. Leskova) Phys. Rev. Lett. **104**, 223904 (1-4)(2010).
430. Negative Refraction of a Surface Plasmon Polariton (with T.A. Leskova), Metamaterials **4**, 214-224 (2010).
431. The Scattering of Surface Plasmon polaritons by Nanoscale Surface Defects (with T.A. Leskova, E.E. García-Guerrero, E.R. Méndez), Fiz. Nizk. Temperatur **36**, 1022-1029 (2010).
432. Rainbow Trapping of Guided Waves (with J. Polanco, R.M. Fitzgerald, and T.A. Leskova), Fiz. Nizk. Temperatur **37**, 1173-1180 (2011).
433. Light scattering from anisotropic, randomly rough, perfectly conducting surfaces (with I. Simonsen, J.B. Kryvi, and T.A. Leskova), Comput. Phys. Commun. **182**, 1904-1907 (2011).
434. Scattering of surface-plasmon polaritons by a localized dielectric surface defect studied using an effective boundary condition (with B. Baumeier, F. Huerkamp, and T.A. Leskova), Phys. Rev. A **84**, 013810(1-8) (2011).
435. The Goos-Hänchen effect for surface plasmon polaritons (with F. Huerkamp, T.A. Leskova, and B. Baumeier), Opt. Express **9**, 15483-15489 (2011).
436. Satellite peaks in the scattering of light from the two-dimensional randomly rough surface of a dielectric film on a planar metal surface, (with T. Nordam, P.A. Letnes, and I. Simonsen) Opt. Express **20**, 11336-11350 (2012).
437. Propagation of s-polarized surface polaritons circumferentially around a locally cylindrical surface (with J. Polanco and R.M. Fitzgerald), Phys. Lett. A **376**, 1573-1575 (2012).
438. Calculation of the Mueller matrix for scattering of light from two-dimensional rough surfaces (with P.A. Letnes, T. Nordam, and I. Simonsen), Phys. Rev. A **86**, 031803 (1-5) (R) (2012).
439. Design of matched absorbing layers for surface plasmon-polaritons (with S. de la Cruz and E.R. Méndez), Advances in Optoelectronics, Volume 2012, Article ID 598213, 7 pages.
440. Asymmetric transmission of surface plasmon polaritons (with V. Kuzmiak) Phys. Rev. A **86**, 043805 (1-4) (2012).
441. Dispersion and damping of a surface plasmon polariton on a one-dimensional randomly rough metal surface (with S. Chakrabarti), Waves in Random and Complex Media **23**, 128-142 (2013).
442. Scattering of surface plasmon polartons by one-dimensional surface defects (with J. Polanco and R.M. Fitzgerald) Phys. Rev. B **87**, 155417(1-15) (2013).
443. Scattering of a surface plasmon polariton by a localized dielectric surface defect (with R.E. Arias) Opt. Express **21**, 9734-9756 (2013).
444. S-polarized guided electromagnetic waves at a planar interface between vacuum and a graded-index dielectric (with R.M. Fitzgerald, J. Polanco, and A.B. Shvartsburg) Waves in Random and Complex Media **23**, 169-182 (2013).
445. Reconstruction of the surface height autocorrelation function of a randomly rough dielectric surface from incoherent light scattering (with S. Chakrabarti and E.R. Méndez), Phys. Rev. A **88**, 013812 (1-6)(2013).
446. Dynamic and static control of the optical phase of guided p-polarized light for near-field focusing at large angles of incidence (with D. Huang, M.M. Easter, LD. Wellems, H. Mozer, G. Gumbs, and D.A. Cardimona), J. Appl. Phys. **114**, 033106(1-12)(2013).
447. Propagation of p-polarized surface plasmon polaritons circumferentially around a locally cyclindrical surface (with J. Polanco and R.M. Fitzgerald), Opt. Commun. **316**, 120-126 (2013).
448. A surface plasmon polariton Wannier-Stark ladder (with V. Kuzmiak and E.R. Méndez) Opt. Lett. **39**, 1613-1616 (2014).
449. Numerical solutions of the Rayleigh equations for the scattering of light from a two-dimensional randomly rough perfectly conducting surface (with T. Nordam, P.A. Letnes, and I. Simonsen) J. Opt. Soc. Am. A **31**, 1126-1134 (2014).
450. Resonant scattering of surface plasmon polaritons by dressed quantum dots (with D. Huang, M. Easter, G. Gumbs, S.-Y. Lin, D. Cardimona, and X. Zhang) Appl. Phys. Lett. **104**, 251103 (1-5) (2014).

451. Controlling quantum-dot light absorption and emission by a surface plasmon field (with D. Huang, M. Easter, G.A. Gumbs, S. Lin, D. Cardimona, and X. Zhang) Opt. Express **22**, 27576-27605 (2014).
452. Scattering of an obliquely incident surface plasmon polariton from sub-micron metal grooves and ridges (with J. Polanco and R.M. Fitzgerald), Plasmonics **10**, 1173-1183 (2015).
453. Asymmetric propagation of surface plasmon polaritons on a planar grating, (with V. Kuzmiak) Phys. Rev. A 92, 053813(1-9)(2015).
454. Rayleigh and Wood anomalies in the diffraction of light from a perfectly conducting grating (with I. Simonsen, J. Polanco, and R.M. Fitzgerald) J. of Optics **18**, 024004(1-10)(2016).
455. Rayleigh and Wood anomalies in the diffraction of acoustic waves from the periodically corrugated surface of an elastic medium (with I. Simonsen) Low Temp. Phys. (to appear).
456. Leaky surface electromagnetic waves on a high-index dielectric grating (with I. Simonsen, and W. Zierau) Opt. Lett. (to appear).
457. Determination of the normalized surface height autocorrelation function of a two-dimensional randomly rough dielectric surface by the inversion of light scattering data (with I. Simonsen, Ø.S. Hetland, and J. B. Kryvi), Phys. Rev. A (to appear).
458. Numerical studies of the scattering of light from a two-dimensional randomly rough interface between two dielectric media (with Ø.S. Hetland, T. Nordam, and I. Simonsen), Phys. Rev. A (to appear).
459. Experimental and numerical studies of the scattering of light from a two-dimensional randomly rough interface in the presence of total internal reflection: Optical Yoneda peaks (with A.K. Gonzalez-Alcalde, J.-P. Banon, Ø.S. Hetland, E.R. Méndez, T. Nordam, and I. Simonsen), Phys. Rev. Lett. (submitted).

PUBLICATIONS IN CONFERENCE PROCEEDINGS

150. Transmission of Light through a Metal Film with Two Corrugated Surfaces (with R. M. Fitzgerald and T. A. Leskova), SPIE **5878**, 58780Z-1-58780Z-14 (2005).
151. Pseudo-nondiffraction from the Interference of a Pair of Symmetric Collett-Wolf Beams (with Zu-Han Gu, E. R. Méndez, M. Ciftan, and T. A. Leskova), SPIE **5878**, 587810-1 - 587810-7 (2005).
152. Control of the coherence of light scattered from a one-dimensional randomly rough surface that acts as a Schell-model source (with T. A. Leskova and E. R. Méndez) in 23rd Annual Review of Progress in Applied Computational Electromagnetics (ACES, University, MS, 2007) pp. 1902-1908.
153. Replacement of ensemble averaging by the use of a broadband source in scattering from randomly rough surfaces (with T. A. Leskova and E. R. Méndez) in 23rd Annual Review of Progress in Applied Computational Electromagnetics (ACES. University, MS, 2007), pp. 1915-1919.
154. A structure that more than doubles the intensity of an enhanced backscattering peak (with T. A. Leskova, E. R. Méndez, and Zu-Han Gu) SPIE 6672, 66720G-1-5 (2007).
155. Generation of partially coherent light in rough surface scattering and suppression of the speckle it produces (with T. A. Leskova, E. R. Méndez, A. Wang, and Zu-Han Gu) SPIE 66720I-1-15 (2007).
156. Structured Surfaces as Optical Metamaterials (with T.A. Leskova and E. R. Méndez) Proceedings of Metamaterials 2007, eds. F. Bilotti and L. Vegni (University "Roma Tre", Roma, Italy, 2007), pp. 649-652.
157. The Design of Random Surfaces that Produce Nonstandard Refraction of Light (with T.A. Leskova and I. Simonsen) SPIE **7065**, 706506 (1-15) (2008).
158. Reduced Rayleigh Equations in the Scattering of s-Polarized Light from, and its Transmission Through, a Film with Two One-dimensional Rough Surfaces (with T.A. Leskova) SPIE **7065**, 706505 (1-12) (2008).
159. Reduced Rayleigh Equations for the Scattering of s-Polarized Light from and its Transmission Through a Film with Two One-dimensional Rough Surfaces (with T.A. Leskova), www.URSI.org/Proceedings/ProcGA08.
160. The Scattering of Electromagnetic Waves from Two-Dimensional Randomly Rough Perfectly Conducting Surfaces (with I. Simonsen and T. A. Leskova) in 25th Annual Review of Progress in Applied Computational Electromagnetics (ACES, University, MS, 2009), pp. 1915-1919.
161. Surface Plasmon Polariton Analogues of Volume Electromagnetic Wave Effects (with F. Huerkamp and T. A. Leskova) SPIE **7467**, 7467OH (1-10) (2009).
162. Transformations of Surface Plasmon Polaritons by Surface Structures (with T.A. Leskova) Physica B: Condensed Matter, **405**, 2972-2977 (2010).
163. A Kirchhoff Approximation for Surface Plasmon Polaritons, (with T.A. Leskova) SPIE **7792**, 77920S (1-6) (2010).
164. Wavelength-tunable Focal Length of a Nanopatterned Metallic Planar Lens with Strong Focusing Capability, (with L.D. Wellems, D. Huang and T.A. Leskova) SPIE **7792**, 77920S (1-6) (2010).

165. A partially coherent slowly diffracting beam (with E.R. Méndez, E.E. García-Guerrero, Zn-Han Gu, and T.A. Leskova), SPIE **7792**, 7792OT (1-8) (2010).
166. Surface plasmon polaritons on structured surfaces (with T.A. Leskova), Proc. IV International Congress "Metamaterials 2010", Karlsruhe, Germany, September 2010, pp.973-975.
167. The scattering of light from two-dimensional randomly rough surfaces (with T.A. Leskova, P.A. Letnes, T.Nordam, and I Simonsen), SPIE **8172**, 8172209 (1-20) (2011).
168. Asymmetric transmission of surface plasmon polaritons (with V. Kuzmiak) Proc. SPIE **8771**, Metamaterials VIII, 877101 (May 17, 2013); doi.:10.1117/12.2018240; http:11dx.doi.org/10.1117/12.2018240.
169. A surface plasmon polariton analogue of a Wannier-Stark ladder (with V. Kuzmiak and E.R. Méndez) Proc. 16th International Conference on Transparent Optical Networks (ICTON); Graz, Austria July 6-10, 2014.
170. Surface-plasmon field controlled quantum-dot light absorption and spontaneous emission (with D. Huang, M. Easter, G. Gumbs, S.-Y. Lin, D. Cardimona, and X. Zhang, Proc. SPIE **9205**, 920504(1-18)(2014).
171. The inversion of incoherent light scattering data to obtain statistical and optical properties of a two-dimensional randomly rough dielectric surface (with S. Chakrabarti, I. Simonsen, and E.I. Chaikina, Proc. SPIE **9205**, 920505 (1-7)(2014).

BOOKS, CHAPTERS IN BOOKS, AND REVIEW ARTICLES

64. The Wolf Effect in Rough Surface Scattering (with Zu-Han Gu, T.A. Leskova, and M. Ciftan), in *Tribute to Emil Wolf*, ed. T.P. Jannson, (SPIE, Bellingham, WA 2005), pp. 223-245.
65. Nano-Optics of Surface Plasmon Polaritons (with A.V. Zayats and I.I. Smolyaninov) Physics Reports, **408**, 131-314 (2005).
66. Multiple scattering effects in the second harmonic generation of light in reflection from a randomly rough metal surface (with T. A. Leskova, M. Leyva-Lucero, and E. R. Méndez), in *Current Topics in Physics in Honor of Sir Roger J. Elliott*, eds. R. A. Barrio and K. K. Kaski (Imperial College Press, London, 2005), pp. 245-297.
67. Multiple-scattering effects in angular intensity correlation functions (with T. A. Leskova) in *Light Scattering and Nanoscale Surface Roughness*, ed. A. A. Maradudin (Springer, New York, 2006), pp. 371-408.
68. The design of randomly rough surfaces that scatter waves in a specified manner, in *Light Scattering and Nanoscale Roughness,* ed. A. A. Maradudin (Springer, New York, 2006), pp. 467-488.
69. Light scattering from randomly rough surfaces (with E.R. Méndez) Science Progress **90**, 161-221 (2007).
70. *Designer Surfaces* (with E. R. Méndez and T. A. Leskova) (Elsevier, Amsterdam, 2008).
71. Transformation of optical fields by structured surfaces (with E.R. Méndez and T.A. Leskova), in *Structured Surfaces as Optical Metamaterials*, ed. A.A. Maradudin (Cambridge University Press, Cambridge, U.K., 2011), pp.185-231.
72. *Waves in Gradient Metamaterials* (with A.B. Shvartsburg) (World Scientific, Singapore, 2013).
73. Scattering properties of random structures in thin films (with G. Berginc), in *Optical Thin Films and Coatings: From Materials to Applications*, eds. A. Piegari and F. Flory (Woodhead Publishing, Oxford, 2013), pp. 177-289.
74. Introduction: Plasmonics and its building blocks, in *Modern Plasmonics*, eds. A.A. Maradudin, J.R. Sambles, and W.L. Barnes (Elsevier, Amsterdam, 2014), 1-36.
75. Surface electromagnetic waves on structured perfectly conducting surfaces, in *Modern Plasmonics*, eds. A.A. Maradudin, J.R. Sambles, and W.L. Barnes (Elsevier, Amsterdam, 2014), pp. 223-251.