

References

- Afshinmanesh, F., White, J. S., Cai, W., and Brongersma, M. L. (2012), "Measurement of the polarization state of light using an integrated plasmonic polarimeter", *Nanophotonics*, Vol. 1, No. 2, pp. 125–129 2012
- Agarwal, M., Behera, A., and Meshram, M. (2016), "Wide-angle quad-band polarisation-insensitive metamaterial absorber", *Electronics Letters*, Vol. 52, No. 5, pp. 340–342 2016
- Aieta, F., Genevet, P., Kats, M. A., Yu, N., Blanchard, R., Gaburro, Z., and Capasso, F. (2012), "Aberration-free ultrathin flat lenses and axicons at telecom wavelengths based on plasmonic metasurfaces", *Nano Letters*, Vol. 12, No. 9, pp. 4932–4936 2012
- Albooyeh, M., Kruk, S., Menzel, C., Helgert, C., Kroll, M., Krysinski, A., Decker, M., Neshev, D. N., Pertsch, T., Etrich, C., Rockstuhl, C., Tretyakov, S. A., Simovski, C. R., and Kivshar, Y. S. (2014), "Resonant metasurfaces at oblique incidence: interplay of order and disorder", *Scientific Reports*, Vol. 4, p. 4484 2014
- Alitalo, P., Bongard, F., Zürcher, J.-F., Mosig, J., and Tretyakov, S. (2009), "Experimental verification of broadband cloaking using a volumetric cloak composed of periodically stacked cylindrical transmission-line networks", *Applied Physics Letters*, Vol. 94, No. 1, p. 014103 2009
- Alitalo, P., Culhaoglu, A. E., Osipov, A. V., Thurner, S., Kemptner, E., and Tretyakov, S. A. (2012), "Experimental characterization of a broadband transmission-line cloak in free space", *IEEE Transactions on Antennas and Propagation*, Vol. 60, No. 10, pp. 4963–4968 2012
- Ameri, E., Esmaeli, S. H., and Sedighy, S. H. (2018), "Low cost and thin metasurface for ultra wide band and wide angle polarization insensitive radar cross section reduction", *Applied Physics Letters*, Vol. 112, No. 20, p. 201601 2018
- Andryieuski, A., Lavrinenko, A. V., Petrov, M., and Tretyakov, S. A. (2016), "Homogenization of metasurfaces formed by random resonant particles in periodical lattices", *Physical Review B*, Vol. 93, No. 20, p. 205127 2016
- Antosiewicz, T. J., Apell, S. P., Zach, M., Zoric, I., and Langhammer, C. (2012), "Oscillatory optical response of an amorphous two-dimensional array of gold nanoparticles", *Physical Review Letters*, Vol. 109, No. 24, p. 247401 2012
- Asadchy, V., Albooyeh, M., and Tretyakov, S. (2016), "Optical metamirror: all-dielectric frequency-selective mirror with fully controllable reflection phase", *Journal of the Optical Society of America B*, Vol. 33, No. 2, pp. A16–A20 2016
- Asadchy, V. S., Ra'Di, Y., Vehmas, J., and Tretyakov, S. (2015), "Functional metamirrors using bianisotropic elements", *Physical Review Letters*, Vol. 114, No. 9, p. 095503 2015
- Baek, I. H., Choi, S. Y., Lee, H. W., Cho, W. B., Petrov, V., Agnesi, A., Pasiskevicius, V., Yeom, D.-I., Kim, K., and Rotermund, F. (2011), "Single-walled carbon nanotube saturable absorber assisted high-power mode-locking of a Ti: sapphire laser", *Optics Express*, Vol. 19, No. 8, pp. 7833–7838 2011
- Balanis, C. A., *Antenna Theory: Analysis and Design*, John Wiley & Sons 2016
- Bhati, A., Shukla, A., Jain, A., Hiremath, K. R., and Dixit, V. (2015), "Numerical study of randomly distributed wire based metamaterial absorber", in *2015 International Conference on Microwave, Optical and Communication Engineering (ICMOCE)*, pp. 92–95, IEEE 2015
- Bhattacharya, A., Bhattacharyya, S., Ghosh, S., Chaurasiya, D., and Srivastava, K. V. (2015), "An ultrathin penta-band polarization-insensitive compact metamaterial absorber for airborne radar applications", *Microwave and Optical Technology Letters*, Vol. 57, No. 11, pp. 2519–2524 2015
- Bhattacharyya, S. and Srivastava, K. V. (2013), "An ultra thin electric field driven LC resonator

- structure as metamaterial absorber for dual band applications", in *2013 International Symposium on Electromagnetic Theory*, pp. 722–725, IEEE 2013
- Bhattacharyya, S., Ghosh, S., and Srivastava, K. V. (2013a), "Bandwidth-Enhanced Metamaterial Absorber Using Electric Field-Driven Lc Resonator For Airborne Radar Applications", *Microwave and Optical Technology Letters*, Vol. 55, No. 9, pp. 2131–2137 2013a
- Bhattacharyya, S., Ghosh, S., and Srivastava, K. V. (2013b), "Triple band polarization-independent metamaterial absorber with bandwidth enhancement at X-band", *Journal of Applied Physics*, Vol. 114, No. 9, p. 094514 2013b
- Bhattacharyya, S., Ghosh, S., Chaurasiya, D., and Srivastava, K. V. (2015), "Bandwidth-enhanced dual-band dual-layer polarization-independent ultra-thin metamaterial absorber", *Applied Physics A*, Vol. 118, No. 1, pp. 207–215 2015
- Bian, B., Liu, S., Wang, S., Kong, X., Zhang, H., Ma, B., and Yang, H. (2013), "Novel triple-band polarization-insensitive wide-angle ultra-thin microwave metamaterial absorber", *Journal of Applied Physics*, Vol. 114, No. 19, p. 194511 2013
- Bilotti, F. and Sevgi, L. (2012), "Metamaterials: Definitions, properties, applications, and FDTD-based modeling and simulation", *International Journal of RF and Microwave Computer-Aided Engineering*, Vol. 22, No. 4, pp. 422–438 2012
- Bliokh, K. Y., Bliokh, Y. P., Freilikher, V., Savel'ev, S., and Nori, F. (2008), "Colloquium: Unusual resonators: Plasmonics, metamaterials, and random media", *Reviews of Modern Physics*, Vol. 80, No. 4, p. 1201 2008
- Bole, A. G., Dineley, W. O., and Wall, A., *Radar and ARPA manual*, Elsevier 2005
- Caloz, C. (2009), "Perspectives on EM metamaterials", *Materials Today*, Vol. 12, No. 3, pp. 12–20 2009
- Cao, S., Wang, T., Zhao, J., Tan, F., Zhang, X., and Yu, W. (2015), "Hierarchic random nanosphere model for broadband solar energy absorbers", *Optical Materials Express*, Vol. 5, No. 12, pp. 2777–2785 2015
- Chambers, B. and Tennant, A. (1994), "Design of wideband Jaumann radar absorbers with optimum oblique incidence performance", *Electronics Letters*, Vol. 30, No. 18, pp. 1530–1532 1994
- Chaurasiya, D., Ghosh, S., Bhattacharyya, S., and Srivastava, K. V. (2015), "An ultrathin quad-band polarization-insensitive wide-angle metamaterial absorber", *Microwave and Optical technology letters*, Vol. 57, No. 3, pp. 697–702 2015
- Chen, H., Huang, L., Cheng, X., and Wang, H. (2011), "Magnetic properties of metamaterial composed of closed rings", *Progress In Electromagnetics Research*, Vol. 115, pp. 317–326 2011
- Chen, J., Huang, X., Zerihun, G., Hu, Z., Wang, S., Wang, G., Hu, X., and Liu, M. (2015a), "Polarization-independent, thin, broadband metamaterial absorber using double-circle rings loaded with lumped resistances", *Journal of Electronic Materials*, Vol. 44, No. 11, pp. 4269–4274 2015a
- Chen, K., Feng, Y., Yang, Z., Cui, L., Zhao, J., Zhu, B., and Jiang, T. (2016), "Geometric phase coded metasurface: from polarization dependent directive electromagnetic wave scattering to diffusion-like scattering", *Scientific Reports*, Vol. 6, p. 35968 2016
- Chen, W., Balanis, C. A., and Birtcher, C. R. (2015b), "Checkerboard EBG surfaces for wideband radar cross section reduction", *IEEE Transactions on Antennas and Propagation*, Vol. 63, No. 6, pp. 2636–2645 2015b
- Chen, W., Balanis, C. A., Birtcher, C. R., and Modi, A. Y. (2018a), "Cylindrically curved checkerboard surfaces for radar cross-section reduction", *IEEE Antennas and Wireless Propagation Letters*, Vol. 17, No. 2, pp. 343–346 2018a
- Chen, Z., Deng, H., Xiong, Q., and Liu, C. (2018b), "Phase gradient metasurface with broadband anomalous reflection based on cross-shaped units", *Applied Physics A*, Vol. 124, No. 3, p. 281 2018b
- Cheng, Y., Nie, Y., and Gong, R. (2013), "Metamaterial absorber and extending absorbance bandwidth based on multi-cross resonators", *Applied Physics B*, Vol. 111, No. 3, pp. 483–488 2013

- Chipouline, A., Sugavanam, S., Petschulat, J., and Pertsch, T. (2012), "Extension of the multipole approach to random metamaterials", *Advances in OptoElectronics*, Vol. 2012 2012
- Costa, F., Genovesi, S., Monorchio, A., and Manara, G. (2012), "A circuit-based model for the interpretation of perfect metamaterial absorbers", *IEEE Transactions on Antennas and Propagation*, Vol. 61, No. 3, pp. 1201–1209 2012
- Cui, T. J., Smith, D. R., and Liu, R., *Metamaterials*, Springer 2010
- Dallenbach, W. and Kleinsteuber, W. (1938), "Reflection and absorption of decimeter-waves by plane dielectric layers", *Hochfreq. u. Elektroak*, Vol. 51, pp. 152–156 1938
- Devlin, R. C., Khorasaninejad, M., Chen, W. T., Oh, J., and Capasso, F. (2016), "Broadband high-efficiency dielectric metasurfaces for the visible spectrum", *Proceedings of the National Academy of Sciences*, Vol. 113, No. 38, pp. 10473–10478 2016
- Ding, F., Cui, Y., Ge, X., Jin, Y., and He, S. (2012), "Ultra-broadband microwave metamaterial absorber", *Applied Physics Letters*, Vol. 100, No. 10, p. 103506 2012
- Engheta, N. (2002), "An idea for thin subwavelength cavity resonators using metamaterials with negative permittivity and permeability", *IEEE Antennas and wireless propagation letters*, Vol. 1, pp. 10–13 2002
- Engheta, N. and Ziolkowski, R. W., *Metamaterials: physics and engineering explorations*, John Wiley & Sons 2006
- Fernez, N., Burgnies, L., Hao, J., Mismar, C., Ducournau, G., Lippens, D., and Lheurette, É. (2018), "Radiative quality factor in thin resonant metamaterial absorbers", *IEEE Transactions on Microwave Theory and Techniques*, Vol. 66, No. 4, pp. 1764–1772 2018
- Gaburro, Z., Yu, N., Genevet, P., Kats, M., Aieta, F., and Capasso, F. (2012), "Molding light propagation with phase discontinuities", in *Integrated Photonics Research, Silicon and Nanophotonics*, pp. IW1B–1, Optical Society of America 2012
- Galarregui, J. C. I., Pereda, A. T., De Falcon, J. L. M., Ederra, I., Gonzalo, R., and de Maagt, P. (2013), "Broadband radar cross-section reduction using AMC technology", *IEEE Transactions on Antennas and Propagation*, Vol. 61, No. 12, pp. 6136–6143 2013
- Ghosh, S., Bhattacharyya, S., and Srivastava, K. V. (2014), "Bandwidth-enhancement of an ultrathin polarization insensitive metamaterial absorber", *Microwave and Optical Technology Letters*, Vol. 56, No. 2, pp. 350–355 2014
- Gil, M., Bonache, J., and Martin, F. (2008), "Metamaterial filters: A review", *Metamaterials*, Vol. 2, No. 4, pp. 186–197 2008
- Gollub, J., Hand, T., Sajuyigbe, S., Mendonca, S., Cummer, S., and Smith, D. R. (2007), "Characterizing the effects of disorder in metamaterial structures", *Applied Physics Letters*, Vol. 91, No. 16, p. 162907 2007
- Gu, S., Barrett, J., Hand, T., Popa, B.-I., and Cummer, S. (2010), "A broadband low-reflection metamaterial absorber", *Journal of Applied Physics*, Vol. 108, No. 6, p. 064913 2010
- Gu, S., Su, B., and Zhao, X. (2013), "Planar isotropic broadband metamaterial absorber", *Journal of Applied Physics*, Vol. 114, No. 16, p. 163702 2013
- Han, J., Cao, X., Gao, J., Wei, J., Zhao, Y., Li, S., and Zhang, Z. (2018), "Broadband radar cross section reduction using dual-circular polarization diffusion metasurface", *IEEE Antennas and Wireless Propagation Letters*, Vol. 17, No. 6, pp. 969–973 2018
- Hao, J., Lheurette, E., Burgnies, L., Okada, E., and Lippens, D. (2014), "Bandwidth enhancement in disordered metamaterial absorbers", *Applied Physics Letters*, Vol. 105, No. 8, p. 081102 2014
- Hao, J., Niemiec, R., Burgnies, L., Lheurette, E., and Lippens, D. (2016), "Broadband absorption through extended resonance modes in random metamaterials", *Journal of Applied Physics*, Vol. 119, No. 19, p. 193104 2016
- Helgert, C., Rockstuhl, C., Etrich, C., Menzel, C., Kley, E.-B., Tunnermann, A., Lederer, F., and Pertsch, T. (2009), "Effective properties of amorphous metamaterials", *Physical Review B*, Vol. 79, p. 233107 2009
- Huang, F.-C., Chiu, C.-N., Wu, T.-L., and Chiou, Y.-P. (2015), "A circular-ring

- miniaturized-element metasurface with many good features for frequency selective shielding applications", *IEEE Transactions on Electromagnetic Compatibility*, Vol. 57, No. 3, pp. 365–374 2015
- Huang, L., Chen, X., Muhlenbernd, H., Li, G., Bai, B., Tan, Q., Jin, G., Zentgraf, T., and Zhang, S. (2012), "Dispersionless phase discontinuities for controlling light propagation", *Nano Letters*, Vol. 12, No. 11, pp. 5750–5755 2012
- Huang, L., Chen, X., Muhlenbernd, H., Zhang, H., Chen, S., Bai, B., Tan, Q., Jin, G., Cheah, K.-W., Qiu, C.-W. *et al.* (2013), "Three-dimensional optical holography using a plasmonic metasurface", *Nature Communications*, Vol. 4, p. 2808 2013
- Ishimaru, A., *Electromagnetic wave propagation, radiation, and scattering from fundamentals to applications*, Wiley Online Library 2017
- Islam, R. and Eleftheriades, G. V. (2004), "Phase-agile branch-line couplers using metamaterial lines", *IEEE Microwave and wireless components letters*, Vol. 14, No. 7, pp. 340–342 2004
- Landy, N. I., Sajuyigbe, S., Mock, J. J., Smith, D. R., and Padilla, W. J. (2008), "Perfect Metamaterial Absorber", *Physical Review Letters*, Vol. 100, p. 207402 May 2008
- Lapine, M. and Tretyakov, S. (2007), "Contemporary notes on metamaterials", *IET microwaves, antennas & propagation*, Vol. 1, No. 1, pp. 3–11 2007
- Lee, J. and Lim, S. (2011), "Bandwidth-enhanced and polarisation-insensitive metamaterial absorber using double resonance", *Electronics Letters*, Vol. 47, No. 1, pp. 8–9 2011
- Li, H., Yuan, L. H., Zhou, B., Shen, X. P., Cheng, Q., and Cui, T. J. (2011), "Ultrathin multiband gigahertz metamaterial absorbers", *Journal of Applied Physics*, Vol. 110, No. 1, p. 014909 2011
- Li, H., Wang, G., Xu, H.-X., Cai, T., and Liang, J. (2015), "X-band phase-gradient metasurface for high-gain lens antenna application", *IEEE Transactions on Antennas and Propagation*, Vol. 63, No. 11, pp. 5144–5149 2015
- Li, H., Wang, G., Liang, J., Gao, X., Hou, H., and Jia, X. (2016), "Single-layer focusing gradient metasurface for ultrathin planar lens antenna application", *IEEE Transactions on Antennas and Propagation*, Vol. 65, No. 3, pp. 1452–1457 2016
- Li, M., Yang, H.-L., Hou, X.-W., Tian, Y., and Hou, D.-Y. (2010), "Perfect metamaterial absorber with dual bands", *Progress In Electromagnetics Research*, Vol. 108, pp. 37–49 2010
- Li, Y., Zhang, J., Qu, S., Wang, J., Chen, H., Xu, Z., and Zhang, A. (2014), "Wideband radar cross section reduction using two-dimensional phase gradient metasurfaces", *Applied Physics Letters*, Vol. 104, No. 22, p. 221110 2014
- Libi Mol, V. A. H. and Aanandan, C. K. (2018), "Wideband radar cross section reduction using artificial magnetic conductor checkerboard surface", *Progress In Electromagnetics Research*, Vol. 69, pp. 171–183 2018
- Liu, L., Caloz, C., and Itoh, T. (2002), "Dominant mode leaky-wave antenna with backfire-to-endfire scanning capability", *Electronics Letters*, Vol. 38, No. 23, pp. 1414–1416 2002
- Liu, L., Zhang, X., Kenney, M., Su, X., Xu, N., Ouyang, C., Shi, Y., Han, J., Zhang, W., and Zhang, S. (2014), "Broadband metasurfaces with simultaneous control of phase and amplitude", *Advanced Materials*, Vol. 26, No. 29, pp. 5031–5036 2014
- Liu, Y., Gu, S., Luo, C., and Zhao, X. (2012), "Ultra-thin broadband metamaterial absorber", *Applied Physics A*, Vol. 108, No. 1, pp. 19–24 2012
- Masud, M. M., Ijaz, B., Ullah, I., and Braaten, B. (2012), "A compact dual-band emi metasurface shield with an actively tunable polarized lower band", *IEEE Transactions on Electromagnetic Compatibility*, Vol. 54, No. 5, pp. 1182–1185 2012
- Modi, A. Y., Balanis, C. A., Birtcher, C. R., and Shaman, H. N. (2017), "Novel design of ultrabroadband radar cross section reduction surfaces using artificial magnetic conductors", *IEEE Transactions on Antennas and Propagation*, Vol. 65, No. 10, pp. 5406–5417 2017
- Moreau, A., Ciraci, C., Mock, J. J., Hill, R. T., Wang, Q., Wiley, B. J., Chilkoti, A., and Smith, D. R. (2012), "Controlled-reflectance surfaces with film-coupled colloidal nanoantennas", *Nature*, Vol. 492, No. 7427, pp. 86–89 2012

- Mueller, J. B., Leosson, K., and Capasso, F. (2016), "Ultracompact metasurface in-line polarimeter", *Optica*, Vol. 3, No. 1, pp. 42–47 2016
- Muhlig, S., Rockstuhl, C., Yannopapas, V., Burgi, T., Shalkevich, N., and Lederer, F. (2011), "Optical properties of a fabricated self-assembled bottom-up bulk metamaterial", *Optics Express*, Vol. 19, No. 10, pp. 9607–9616 2011
- Muhlig, S., Cunningham, A., Dintinger, J., Scharf, T., Burgi, T., Lederer, F., and Rockstuhl, C. (2013), "Self-assembled plasmonic metamaterials", *Nanophotonics*, Vol. 2, No. 3, pp. 211–240 2013
- Naito, Y. and Suetake, K. (1971), "Application of ferrite to electromagnetic wave absorber and its characteristics", *IEEE Transactions on Microwave Theory and Techniques*, Vol. 19, No. 1, pp. 65–72 1971
- Nishijima, Y., Rosa, L., and Juodkazis, S. (2012), "Surface plasmon resonances in periodic and random patterns of gold nano-disks for broadband light harvesting", *Optics Express*, Vol. 20, No. 10, pp. 11466–11477 2012
- Papasimakis, N., Fedotov, V., Fu, Y. H., Tsai, D. P., and Zheludev, N. I. (2009), "Coherent and incoherent metamaterials and order-disorder transitions", *Physical Review B*, Vol. 80, p. 041102 2009
- Paquay, M., Iriarte, J.-C., Ederra, I., Gonzalo, R., and de Maagt, P. (2007), "Thin AMC structure for radar cross-section reduction", *IEEE Transactions on Antennas and Propagation*, Vol. 55, No. 12, pp. 3630–3638 2007
- Park, M.-J., Choi, J., and Kim, S.-S. (2000), "Wide bandwidth pyramidal absorbers of granular ferrite and carbonyl iron powders", *IEEE Transactions on Magnetics*, Vol. 36, No. 5, pp. 3272–3274 2000
- Pendry, J., Martin-Moreno, L., and Garcia-Vidal, F. (2004), "Mimicking surface plasmons with structured surfaces", *Science*, Vol. 305, No. 5685, pp. 847–848 2004
- Pendry, J. B., Holden, A., Stewart, W., and Youngs, I. (1996), "Extremely low frequency plasmons in metallic mesostructures", *Physical Review Letters*, Vol. 76, No. 25, pp. 4773–4776 1996
- Pendry, J. B., Holden, A. J., Robbins, D. J., and Stewart, W. (1999), "Magnetism from conductors and enhanced nonlinear phenomena", *IEEE Transactions on Microwave Theory and Techniques*, Vol. 47, No. 11, pp. 2075–2084 1999
- Pozar, D., *Microwave Engineering, 3rd Ed*, Wiley India Pvt. Limited 2009
- Qu, C., Ma, S., Hao, J., Qiu, M., Li, X., Xiao, S., Miao, Z., Dai, N., He, Q., Sun, S. *et al.* (2015), "Tailor the functionalities of metasurfaces based on a complete phase diagram", *Physical Review Letters*, Vol. 115, No. 23, p. 235503 2015
- Rico-Garcia, J. M., Lopez-Alonso, J. M., and Aradian, A. (2012), "Toy model to describe the effect of positional blocklike disorder in metamaterials composites", *Journal of Optical Society of America B*, Vol. 29, No. 1, pp. 53–67 2012
- Salisbury, W. W. (1952), "Absorbent body for electromagnetic waves", US Patent 2,599,944 Jun 10 1952
- Schurig, D., Mock, J. J., Justice, B., Cummer, S. A., Pendry, J. B., Starr, A. F., and Smith, D. R. (2006), "Metamaterial electromagnetic cloak at microwave frequencies", *Science*, Vol. 314, No. 5801, pp. 977–980 2006
- Shamonina, E. and Solymar, L. (2007), "Metamaterials: How the subject started", *Metamaterials*, Vol. 1, No. 1, pp. 12–18 2007
- Shang, Y., Shen, Z., and Xiao, S. (2013), "On the design of single-layer circuit analog absorber using double-square-loop array", *IEEE Transactions on Antennas and Propagation*, Vol. 61, No. 12, pp. 6022–6029 2013
- Shelby, R. A., Smith, D. R., and Schultz, S. (2001), "Experimental verification of a negative index of refraction", *Science*, Vol. 292, No. 5514, pp. 77–79 2001
- Shen, Y., Pei, Z., Pang, Y., Wang, J., Zhang, A., and Qu, S. (2015), "Phase random metasurfaces for broadband wide-angle radar cross section reduction", *Microwave and Optical Technology Letters*, Vol. 57, No. 12, pp. 2813–2819 2015

- Singh, R., Lu, X., Gu, J., Tian, Z., and Zhang, W. (2010), "Random terahertz metamaterials", *Journal of Optics*, Vol. 12, No. 1, p. 015101 2010
- Smith, D. R., Padilla, W. J., Vier, D., Nemat-Nasser, S. C., and Schultz, S. (2000), "Composite medium with simultaneously negative permeability and permittivity", *Physical Review Letters*, Vol. 84, No. 18, p. 4184 2000
- Song, Y.-C., Ding, J., Guo, C.-J., Ren, Y.-H., and Zhang, J.-K. (2015), "Ultra-broadband backscatter radar cross section reduction based on polarization-insensitive metasurface", *IEEE Antennas and Wireless Propagation Letters*, Vol. 15, pp. 329–331 2015
- Steshenko, S. and Capolino, F. (2009), "Theory and Phenomena of Metamaterials", 2009
- Su, J., He, H., Li, Z., Yang, Y. L., Yin, H., and Wang, J. (2018), "Uneven-layered coding metamaterial tile for ultra-wideband RCS reduction and diffuse scattering", *Scientific Reports*, Vol. 8, No. 1, p. 8182 2018
- Su, P., Zhao, Y., Jia, S., Shi, W., and Wang, H. (2016), "An ultra-wideband and polarization-independent metasurface for RCS reduction", *Scientific Reports*, Vol. 6, p. 20387 2016
- Sun, S., He, Q., Xiao, S., Xu, Q., Li, X., and Zhou, L. (2012), "Gradient-index meta-surfaces as a bridge linking propagating waves and surface waves", *Nature Materials*, Vol. 11, No. 5, p. 426 2012
- Swain, R. and Mishra, R. K. (2018), "Phase quantized metasurface supercells for wave manipulation and RCS reduction", *Progress In Electromagnetics Research*, Vol. 74, pp. 125–135 2018
- Tuong, P., Park, J., Rhee, J., Kim, K., Jang, W., Cheong, H., and Lee, Y. (2013), "Polarization-insensitive and polarization-controlled dual-band absorption in metamaterials", *Applied Physics Letters*, Vol. 102, No. 8, p. 081122 2013
- Varkani, A. R., Firouzeh, Z. H., and Nezhad, A. Z. (2018), "Design of a randomised arrangement AMC surfaces for RCS reduction based on equivalent circuit modelling", *IET Microwaves, Antennas & Propagation*, Vol. 12, No. 10, pp. 1684–1690 2018
- Veselago, V. G. (1968), "The electrodynamics of substances with simultaneously negative values of permittivity and permeability", *Sov. Phys. Usp*, Vol. 10, No. 4, pp. 509–514 1968
- Wang, J. and Genack, A. Z. (2011), "Transport through modes in random media", *Nature*, Vol. 471, No. 7338, p. 345 2011
- Wang, K., Zhao, J., Cheng, Q., Cui, T. J. *et al.* (2014), "Broadband and broad-angle low-scattering metasurface based on hybrid optimization algorithm", *Scientific Reports*, Vol. 4, p. 5935 2014
- Wen, D.-e., Yang, H., Ye, Q., Li, M., Guo, L., and Zhang, J. (2013), "Broadband metamaterial absorber based on a multi-layer structure", *Physica Scripta*, Vol. 88, No. 1, p. 015402 2013
- Xiong, H., Hong, J. S., Luo, C. M., and Zhong, L. L. (2013), "An ultrathin and broadband metamaterial absorber using multi-layer structures", *Journal of Applied Physics*, Vol. 114, No. 6, p. 064109 2013
- Xu, H.-X., Wang, G.-M., Qi, M.-Q., Liang, J.-G., Gong, J.-Q., and Xu, Z.-M. (2012), "Triple-band polarization-insensitive wide-angle ultra-miniature metamaterial transmission line absorber", *Physical Review B*, Vol. 86, No. 20, p. 205104 2012
- Xue, J., Jiang, W., and Gong, S. (2017), "Chessboard AMC surface based on quasi-fractal structure for wideband RCS reduction", *IEEE Antennas and Wireless Propagation Letters*, Vol. 17, No. 2, pp. 201–204 2017
- Yang, G. H., Liu, X. X., Lv, Y. L., Fu, J. H., Wu, Q., and Gu, X. (2014), "Broadband polarization-insensitive absorber based on gradient structure metamaterial", *Journal of Applied Physics*, Vol. 115, No. 17, p. 17E523 2014
- Yang, H., Cao, X.-Y., Gao, J., Li, W., Yuan, Z., and Shang, K. (2013), "Low RCS metamaterial absorber and extending bandwidth based on electromagnetic resonances", *Progress In Electromagnetics Research*, Vol. 33, pp. 31–44 2013
- Yang, J. and Shen, Z. (2007), "A thin and broadband absorber using double-square loops", *IEEE Antennas and Wireless Propagation Letters*, Vol. 6, pp. 388–391 2007
- Yoo, M. and Lim, S. (2014), "Polarization-independent and ultrawideband metamaterial absorber

- using a hexagonal artificial impedance surface and a resistor-capacitor layer", *IEEE Transactions on Antennas and Propagation*, Vol. 62, No. 5, pp. 2652–2658 2014
- Yoo, Y. J., Kim, Y. J., Van Tuong, P., Rhee, J. Y., Kim, K. W., Jang, W. H., Kim, Y., Cheong, H., and Lee, Y. (2013), "Polarization-independent dual-band perfect absorber utilizing multiple magnetic resonances", *Optics Express*, Vol. 21, No. 26, pp. 32484–32490 2013
- Yoshiizumi, H., Suga, R., Hashimoto, O., and Araki, K. (2015), "A design of circular patch array absorber based on patch antenna theory", in *2015 European Microwave Conference (EuMC)*, pp. 1100–1103, IEEE 2015
- Yu, N., Genevet, P., Kats, M. A., Aieta, F., Tetienne, J.-P., Capasso, F., and Gaburro, Z. (2011), "Light propagation with phase discontinuities: generalized laws of reflection and refraction", *Science*, Vol. 334, No. 6054, pp. 333–337 2011
- Yuan, X., Zhang, C., Chen, M., Cheng, Q., Cheng, X., Huang, Y., and Fang, D. (2018), "Wideband High-Absorption Electromagnetic Absorber With Chaos Patterned Surface", *IEEE Antennas and Wireless Propagation Letters*, Vol. 18, No. 1, pp. 197–201 2018
- Zaker, R. and Sadeghzadeh, A. (2018), "Double-layer ultra-thin artificial magnetic conductor structure for wideband radar cross-section reduction", *IET Microwaves, Antennas & Propagation*, Vol. 12, No. 9, pp. 1601–1607 2018
- Zhao, J., Sima, B., Jia, N., Wang, C., Zhu, B., Jiang, T., and Feng, Y. (2016), "Achieving flexible low-scattering metasurface based on randomly distribution of meta-elements", *Optics Express*, Vol. 24, No. 24, pp. 27849–27857 2016
- Zharov, A. A., Shadrivov, I. V., and Kivshar, Y. S. (2005), "Suppression of left-handed properties in disordered metamaterials", *Journal of Applied Physics*, Vol. 97, No. 11, p. 113906 2005
- Zheng, G., Muhlenbernd, H., Kenney, M., Li, G., Zentgraf, T., and Zhang, S. (2015), "Metasurface holograms reaching 80% efficiency", *Nature Nanotechnology*, Vol. 10, No. 4, p. 308 2015
- Zheng, Q., Li, Y., Zhang, J., Ma, H., Wang, J., Pang, Y., Han, Y., Sui, S., Shen, Y., Chen, H. *et al.* (2017), "Wideband, wide-angle coding phase gradient metasurfaces based on Pancharatnam-Berry phase", *Scientific Reports*, Vol. 7, p. 43543 2017
- Zhi Cheng, Y., Wang, Y., Nie, Y., Zhou Gong, R., Xiong, X., and Wang, X. (2012a), "Design, fabrication and measurement of a broadband polarization-insensitive metamaterial absorber based on lumped elements", *Journal of applied physics*, Vol. 111, No. 4, p. 044902 2012a
- Zhi Cheng, Y., Wang, Y., Nie, Y., Zhou Gong, R., Xiong, X., and Wang, X. (2012b), "Design, fabrication and measurement of a broadband polarization-insensitive metamaterial absorber based on lumped elements", *Journal of Applied Physics*, Vol. 111, No. 4, p. 044902 2012b
- Zhou, Y., Zhang, G., Chen, H., Zhou, P., Wang, X., Zhang, L., Zhang, L., Xie, J., and Deng, L. (2018), "Design of phase gradient coding metasurfaces for broadband wave modulating", *Scientific Reports*, Vol. 8, No. 1, p. 8672 2018