



Halim Yanikomeroglu (F'17) was born in Giresun, Turkey, in 1968. He received the B.Sc. degree in electrical and electronics engineering from the Middle East Technical University, Ankara, Turkey, in 1990, and the M.A.Sc. degree in electrical engineering (now ECE) and the Ph.D. degree in electrical and computer engineering from the University of Toronto, Canada, in 1992 and 1998, respectively.

During 1993–1994, he was with the R&D Group of Marconi Kominikasyon A.S., Ankara, Turkey. Since 1998 he has been with the Department of Systems and Computer Engineering at Carleton University, Ottawa, Canada, where he is now a Full Professor. His research interests cover many aspects of wireless technologies with a special emphasis on cellular networks. He has coauthored about 300 peer-reviewed research papers including 85+ in the IEEE journals, and has given a high number of tutorials and invited seminars on wireless technologies in the leading international conferences (60+ tutorials/seminars since 2012); these publications have received 8,500+ citations (Google Scholar). In recent years, his research has been funded by Huawei, Telus, Allen Vanguard, Blackberry, Samsung, Industry Canada, Communications Research Centre of Canada (CRC), DragonWave, and Nortel. This collaborative research resulted in about 25 patents (granted and applied).

Dr. Yanikomeroglu is a Fellow of the IEEE. He is a Distinguished Lecturer for the IEEE Communications Society (2015–2018) and a Distinguished Speaker for the IEEE Vehicular Technology Society in 5G wireless technologies. He has been involved in the organization of the IEEE Wireless Communications and Networking Conference (WCNC) from its inception in 1998 in various capacities including serving as a Steering Committee member, Executive Committee member and the Technical Program Chair or Co-Chair of [WCNC 2004](#) (Atlanta), [WCNC 2008](#) (Las Vegas), and [WCNC 2014](#) (Istanbul). He was the General Co-Chair of the IEEE 72nd Vehicular Technology Conference ([VTC 2010-Fall](#)) held in Ottawa, and is currently serving as the IEEE 86th Vehicular Technology Conference ([VTC 2017-Fall](#)) to be held in Toronto. He has served in the editorial boards of the IEEE Transactions on Communications, IEEE Transactions on Wireless Communications, and IEEE Communications Surveys & Tutorials. He was the Chair of the IEEE's Technical Committee on Personal Communications (now called Wireless Technical Committee).

Dr. Yanikomeroglu is a recipient of the IEEE Ottawa Section Outstanding Educator Award in 2014, Carleton University Faculty Graduate Mentoring Award in 2010, the Carleton University Graduate Students Association Excellence Award in Graduate Teaching in 2010, and the Carleton University Research Achievement Award in 2009. Dr. Yanikomeroglu spent the 2011–2012 academic year at TOBB University of Economics and Technology, Ankara, Turkey, as a Visiting Professor. He is a registered Professional Engineer in the province of Ontario, Canada.

1. Most Significant Contributions to Research and/or to Practical Applications

A) Cellular Networks: Since my graduate studies, I've worked on 2G, 3G, and 4G cellular networks. Currently, the main emphasis in my research group is 5G wireless networks. I lead one of the largest academic-industrial collaborative research projects in Canada on 5G wireless; this 5-year project (2012–2016) is funded by the ORF program of the Ontario Ministry of Economic Development & Innovation, Huawei Canada, and Telus. I've extensively published in this area (layers 1, 2, and 3; refer to Sec. 2.1.1). I also gave a high number of tutorials in this area in the major int'l IEEE events. I am an IEEE Distinguished Lecturer in 5G technologies for both Communications and Vehicular Technology Societies. My research group at Carleton is recognized as an int'l hub in 5G research, and it attracts a high number of visiting researchers (professors, PDFs, PhD students; refer to Sec. 5).

B) Relaying Technologies in Cellular Networks: Relay-based cooperative communications has started becoming a popular research topic in cellular networks around year 2000. I have worked in this area since that time from a variety of angles.

- A position paper that I authored (as a solo author) for a European workshop in 2002 ("Fixed and Mobile Relaying Technologies for Cellular Networks") is arguably the first of its kind. Although the proceedings of this workshop are not available over the internet, the paper received 144 citations. Two years later, I co-authored with a group of colleagues from WWRP one of the most-cited overview paper in this area ("Relay-based Deployment Concepts for Wireless and Mobile Broadband Radio", IEEE Commun. Magazine, Sep 2004; 1,959 citations). In addition, to the best of my knowledge, I developed the first tutorial on the subject which was offered 10 times during 2004-2010 in various major int'l IEEE conferences such as ICCs & Globecom.

- **Physical Layer:** The end-to-end performance formulations in multihop wireless links with and without cooperative diversity were presented for the first time in the literature in a paper that I coauthored with a PhD student ("Multihop Diversity in Wireless Relaying Channels", IEEE Trans. Commun., Oct. 2004). To the best of my knowledge, it was also observed for the first time in this paper that the amplify-and-forward relaying may outperform the decode-and-forward type in certain scenarios. This paper is one of the most-cited papers in cooperative communications with 721 citations (the conference paper versions of this work received another 120 citations).

- **Radio Resource Management (RRM):** With my students, I developed some of the first RRM algorithms in relay-based cellular networks; my studies published in WCNC 2002, VTC2003-Fall, and Globecom 2004, are among the earliest work which have been considered as benchmarks in many subsequent studies (667 citations). In addition, 5 IEEE journal papers I coauthored in 2010 on RRM received 848 citations.

C) Impact to Implementation and Standards: My research group has made a long-lasting impact to the operation of the wireless networks by participating in the process which resulted in the embracement of the relaying concept in 4G LTE standards. My work in this area has been well received by industry and cited in a high number of patents. I participated in the relaying working group of the highly influential European Union project WINNER (2004-2007); I mainly contributed to interference coordination in cellular relay networks. A number of concepts developed in WINNER, including relaying, subsequently became part of 4G LTE/LTE-Advanced standards. Full-blown relaying in a variety of forms including device-to-device communications is expected to unfold with the advent of 5G wireless networks in 2020s. I have collaborated extensively with leading industrial research labs, including Huawei, Samsung, Blackberry, and Nortel. These collaborations have resulted in 16 granted patents as well as 10 US patent applications in key 4G and 5G wireless technologies.

2. Research Contributions and Practical Applications [2011-2017]

Google Scholar Citations (Feb. 2017)	Total: 8,583	h-index: 37	i10-index: 111	i100-index: 18	i1000-index: 1
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	2011	2012	2013	2014	2015	2016	2017 + accepted	Under review	Total
Journal	8	6	6	6	9	15	11	25	86
Conference	16	16	9	15	14	11	3	1	85
Book chapter	1	--	--	--	--	--	--	--	1

Patent filing	1	2	2	4	4	4	--	--	17
Patent granted	--	1	3	4	4	4	--	--	16
Total	26	25	20	29	31	34	14	26	205

2.1.1 Articles in Refereed Journal Publications – Published or Accepted [2011 – 2017]

For full citation information and softcopies refer to www.sce.carleton.ca/faculty/yanikomeroglu/cv/publications.shtml.

[J61] F. Lagum, Q.-N. Le-The, T. Beitelmal, S.S. Szyszkowicz, H. Yanikomeroglu, “Cell switch-off for networks deployed with variable spatial regularity”, to appear in *IEEE Wireless Communications Letters* (acceptance: 31 January 2017).

[J60] E. Bedeer, M. Ahmed, H. Yanikomeroglu, “A very low complexity successive symbol-by-symbol sequence estimator for binary faster-than-Nyquist signaling”, to appear in *IEEE Access* (acceptance: 29 January 2017).

[J59] N. Palizban, S. Szyszkowicz, H. Yanikomeroglu, “Automation of millimeter wave network planning for outdoor coverage in dense urban areas using wall-mounted base stations”, to appear in *IEEE Wireless Communications Letters* (acceptance: 16 January 2017).

[J58] E. Erdogan, A. Afana, S. Ikki, H. Yanikomeroglu, “Antenna selection in MIMO cognitive AF relaying networks with mutual interference and limited feedback”, to appear in *IEEE Communications Letters* (acceptance: 03 January 2017).

[J57] H.U. Sokun, M.C. Ilter, S. Ikki, H. Yanikomeroglu, “A spectrally efficient signal space diversity-based two-way relaying system”, to appear in *IEEE Transactions on Vehicular Technology* (acceptance: 12 December 2016).

[J56] D. Solomitckii, M. Gapeyenko, S. Szyszkowicz, S. Andreev, H. Yanikomeroglu, Y. Koucheryavy, “Towards massive ray-based simulations of mmWave small cells on open urban maps”, to appear in *IEEE Antennas and Wireless Propagation Letters* (acceptance: 28 November 2016).

[J55] G. Bulu, T. Ahmed, R.H. Gohary, C. Toker, H. Yanikomeroglu, “Antenna port selection in a coordinated cloud radio access network”, to appear in *IEEE Communications Letters* (acceptance: 09 November 2016).

[J54] H.U. Sokun, H. Yanikomeroglu, “On the spectral efficiency of selective decode-and-forward relaying”, to appear in *IEEE Transactions on Vehicular Technology* (acceptance: 23 August 2016).

[J53] M.R. Abedi, N. Mokari, M.R. Javan, H. Yanikomeroglu, “Secure communication in OFDMA based cognitive radio networks: An incentivized secondary network coexistence approach”, to appear in *IEEE Transactions on Vehicular Technology* (acceptance: 29 March 2016).

[J52] M.R. Abedi, N. Mokari, H. Saeedi, H. Yanikomeroglu, “Robust resource allocation to enhance physical layer security in systems with full-duplex receivers: Active adversary”, *IEEE Transactions on Wireless Communications*, vol. 16, no. 2, pp. 885-899, February 2017.

[J51] J. Guo, S. Durrani, X. Zhou, H. Yanikomeroglu, “Device-to-device communication underlaying a finite cellular network region”, *IEEE Transactions on Wireless Communications*, vol. 16, no. 1, pp. 332-347, January 2017.

[J50] David Gonzalez G, Jyri Hamalainen, Halim Yanikomeroglu, Mario Garcia-Lozano, and Gamini Senarath, “A novel multiobjective cell switch-off framework for cellular networks”, *IEEE Access*, vol. 4, pp. 7883-7898, 2016.

[J49] I. Bor-Yaliniz, H. Yanikomeroglu, “The new frontier in RAN heterogeneity: Multi-tier drone-cells”, *IEEE Communications Magazine*, Nov 2016.

[J48] J. Cabrejas, S. Rogers, D. Calabuig, Y.M.M. Fouad, R.H. Gohary, J.F. Monserrat, H. Yanikomeroglu, “Non-coherent open-loop MIMO communications over temporally-correlated channels”, *IEEE Access*, vol. 4, 2016.

[J47] H. Ghazzai, E. Yaacoub, A. Kadri, H. Yanikomeroglu, M.-S. Alouini, “Next-generation environment-aware cellular networks: Modern green techniques and implementation challenges”, *IEEE Access*, vol. 4, 2016.

- [J46] M. Mirahsan, H. Yanikomeroglu, G. Senarath, N.-D. Dao, “Analytic modeling of SIR in cellular networks with heterogeneous traffic”, *IEEE CL*, Aug 2016.
- [J45] S. Andreev, O. Galinina, A. Pyattaev, J. Hosek, P. Masek, H. Yanikomeroglu, Y. Koucheryavy, “Exploring synergy between communications, caching, and computing in 5G-grade deployments”, *IEEE Communications Magazine*, Aug 2016.
- [J44] S. Szyszkowicz, A. Lou, H. Yanikomeroglu, “Automated placement of wall-mounted access stations for LoS coverage in outdoor urban areas”, *IEEE WCL*, June 2016.
- [J43] F. Lagum, S.S. Szyszkowicz, H. Yanikomeroglu, “CoV-based metrics to quantify the regularity of hard-core point processes for modeling the locations of base stations”, *IEEE WCL*, June 2016.
- [J42] A. Sharifian, R. Schoenen, H. Yanikomeroglu, “Joint realtime and non-realtime flows, packet scheduling and resource block allocation in wireless OFDMA networks”, *IEEE TVT*, Apr 2016.
- [J41] M. Abedi, N. Mokari, M.R. Javan, H. Yanikomeroglu, “Limited rate feedback scheme for resource allocation in secure relay-assisted OFDMA networks”, *IEEE TWC*, Apr 2016.
- [J40] M.C. Ilter, H. Yanikomeroglu, P. Dmochowski, “BER upper bound expressions in coded two-transmission schemes with arbitrarily spaced signal constellations”, *IEEE CL*, Feb. 2016.
- [J39] R. Rashtchi, R.H. Gohary, H. Yanikomeroglu, “Generalized cross-layer designs for generic half-duplex multicarrier wireless networks with frequency reuse”, *IEEE TWC*, Jan. 2016.
- [J38] H.U. Yildiz, B. Tavli, H. Yanikomeroglu, “Transmission power control for link level handshaking in wireless sensor networks”, *IEEE Sensors Journal*, 15 Jan. 2016.
- [J37] K. Luo, R.H. Gohary, H. Yanikomeroglu, “Exploiting the N -to-1 mapping in compress-and-forward relaying”, *IEEE Transactions on Information Theory*, Jan. 2016.
- [J36] D. Calabuig, R.H. Gohary, H. Yanikomeroglu, “Optimum transmission through the multiple-antenna Gaussian multiple access channel”, *IEEE Transactions on Information Theory*, Jan. 2016.
- [J35] M. Mirahsan, R. Schoenen, H. Yanikomeroglu, G. Senarath, N. Dao, “User-in-the-loop for HetHetNets with backhaul capacity constraints”, *IEEE WCM*, Oct. 2015.
- [J34] R. Gohary, H. Yanikomeroglu, “On the accuracy of the high SNR approximation of the differential entropy of signals in additive Gaussian noise: Real and complex cases”, *IEEE TVT*, Oct. 2015.
- [J33] M. Mirahsan, R. Schoenen, H. Yanikomeroglu, “HetHetNets: Heterogeneous traffic distribution in heterogeneous wireless cellular networks”, *IEEE JSAC*, Oct. 2015.
- [J32] J. Guo, S. Durrani, X. Zhou, H. Yanikomeroglu, “Outage probability of ad hoc networks with wireless information and power transfer”, *IEEE WCL*, Aug. 2015.
- [J31] H. Sokun, A. Bin Sediq, H. Yanikomeroglu, S. Ikki, “Power allocation optimization in selective DF relaying with different modulation levels in the presence of imperfect channel estimations”, *IEEE CL*, May 2015.
- [J30] M. Khoshkholgh, N. Mokari Yamchi, K. Navaie, H. Yanikomeroglu, V. Leung, K. Shin, “Radio resource allocation for OFDM-based dynamic spectrum sharing: Duality gap and time averaging”, *IEEE JSAC*, May 2015.
- [J29] Y. Fouad, R. Gohary, J. Cabrejas, H. Yanikomeroglu, et al. “Time-frequency Grassmannian signalling for MIMO multi-channel-frequency-flat systems”, *IEEE CL*, Mar. 2015.
- [J28] S. Bu, F.R. Yu, H. Yanikomeroglu, “Interference-aware energy-efficient resource allocation for heterogeneous wireless networks with imperfect dynamics information”, *IEEE TVT*, Mar. 2015.
- [J27] A. Bin Sediq, R. Schoenen, H. Yanikomeroglu, G. Senarath, “Optimized distributed inter-cell interference coordination scheme using projected subgradient and network flow optimization”, *IEEE TCOM*, Jan. 2015.
- [J26] M. Khoshkholgh, K. Navaie, H. Yanikomeroglu, “Optimal design of the spectrum sensing parameters in the overlay spectrum sharing”, *IEEE TMC*, Sep. 2014.
- [J25] S. Szyszkowicz, H. Yanikomeroglu, “A simple approximation to the interference from a large clustered wireless network with correlated shadowing”, *IEEE TWC*, Aug. 2014.

- [J24] M. Tehrani, M. Uysal, H. Yanikomeroglu, “Device-to-device (D2D) communications: An enabling technology for 5G cellular networks”, *IEEE Communications Magazine*, May 2014.
- [J23] R. Gohary, H. Yanikomeroglu, “Grassmannian signalling achieves tight bounds on the ergodic moderate-to-high SNR capacity of the non-coherent MIMO relay channel”, *IEEE TIT*, May 2014.
- [J22] R. Rashtchi, R. Gohary, H. Yanikomeroglu, “Routing, scheduling and power allocation in generic OFDMA wireless networks: Optimal design & efficiently computable bounds”, *IEEE TWC*, Apr. 2014.
- [J21] R. Schoenen, H. Yanikomeroglu, “User-in-the-loop: Spatial and temporal demand shaping for sustainable wireless networks”, *IEEE Communications Magazine*, Feb. 2014.
- [J01]–[J20]: 20 papers in various IEEE journals (2011 – 2013). Not shown due to space limitations.

2.2 Other Contributions (Complete list: www.sce.carleton.ca/faculty/yanikomeroglu/cv/publications.shtml)

- 25 papers under review in IEEE journals.
- 1 book chapters + 105 refereed conference articles. About 25 reports to industry (non-refereed).

2.3.1 Contributions to Practical Applications of Knowledge – Granted Patents

- [P25] US 9,467,212 B2 – System and Method for Multiple-Input Multiple-Output Communication. R. Gohary, H. Yanikomeroglu (11 Oct 2016).
- [P25] US 9,451,611 B2 – System and Method for Controlling Multiple Wireless Access Nodes. Y. Cai, F.R. Yu, G. Senarath, H. Yanikomeroglu (20 Sep 2016).
- [P24] US 9,369,925 B2 – System and Method to Achieve Optimum Efficiency-Jain Fairness in Wireless Systems. A. Bin Sediq, R. Gohary, H. Yanikomeroglu, G. Senarath, H.T. Cheng (14 June 2016).
- [P23] US 9,288,679 B2 – Systems and Method for Greedy-based Autonomous Resource Block Assignment Scheme for Cellular Networks with Self-Organizing Relaying Terminals. Y. Fouad, R. Gohary, H. Yanikomeroglu, G. Senarath (15 Mar 2016).
- [P22] KR 101537736 B1 – Method for Relaying Data in Wireless Network and Personal Relay of Enabling the Method, and Mobile Device for Communicating with the Personal Relay. Y.-D. Kim, M. Salem, A. Adinoyi, H. Yanikomeroglu (17 July 2015).
- [P21] US 9,042,933 B2 – Inter-cell Interference Coordination for Wireless Communication Systems. A. Bin Sediq, R. Schoenen, H. Yanikomeroglu, G. Senarath, Z. Chao, H.T. Cheng, P. Zhu (26 May 2015).
- [P20] CN 102237988 B – Data Transmission Method and System in Cooperative Relay Network, Intermediate Node and Source Node. A. Bin Sediq, P. Djukic, H. Yanikomeroglu, J. Zhang (01 Jan 2014).
- [P18]–[P19] US 8,565,144 B2 – Scheduling Apparatus and Method of Relay-Based Network. M.Salem, A.Adinoyi, H.Yanikomeroglu, D.Falconer, Y.-D.Kim. 23 Oct 2013. Also KR 101542152 B1 (05 Aug 2015).
- [P16]–[P17] US 8,477,679 B2 – Resource Allocation Method and Device for Amplify-and-Forward Relay Network. A. Sharifian, P. Djukic, H. Yanikomeroglu, J. Zhang. 02 July 2013. Also CN 102244930 B (30 Ap 2014).
- [P15] US 8,478,283 B2 – Method and System for Capacity and Coverage Enhancement in Wireless Networks with Relays. S.Periyalwar, O.Mubarek, H. Yanikomeroglu. 02 July 2013.
- [P11]–[P14] US 8,339,975 B2 – Apparatus and Method for Allocating Subchannels and Controlling Interference in OFDMA Systems. M. Salem, A. Adinoyi, M. Rahman, H. Yanikomeroglu, D. Falconer, Y.-D. Kim. 25 Dec 2012. Also JP 5,691,103 B2 (01 Apr 2015); JP 5,419,182 B2 (19 Feb 2014); KR 101469143 B1 (04 Dec 2014).

2.3.2 Contributions to Practical Applications of Knowledge – Applied Patents

- [P1]–[P10] 10 US patent applications (2013 – 2016). Not shown due to space limitations.

3. Other Evidence of Impact and Contributions

- **IEEE Fellow** (2017)
- **Distinguished Lecturer** for IEEE Communications Society.
- **Distinguished Lecturer** for IEEE Vehicular Technology Society, 2014–2016.
- Carleton University's sole nomination for NSERC Steacie Fellowship in 2010 and 2011.
- **Former Chair** of the IEEE's largest committee on wireless communications, "IEEE ComSoc Technical Committee on Personal Commun." (now called, Wireless Commun. TC; 1,600 members).
- IEEE Ottawa Section **Outstanding Educator Award** 2014.
- **Finalist** for Ottawa-Carleton Capital Educators' Awards 2011.
- Carleton University **Teaching Release Award** 2013–2014.
- Carleton University **Outstanding Graduate Students Mentor Award** 2010.
- Carleton University Graduate Students' Assoc. **Excellence Award in Graduate Teaching** 2010.
- Carleton University **Research Achievement Award** 2009.
- Carleton University **Students Choice Teaching Award** 2001.
- **General Chair**: VTC 2017-Fall Toronto, VTC 2010-Fall Ottawa
- **Technical Program Chair/Co-Chair**: WCNC 2004 Atlanta, WCNC 2008 Las Vegas, WCNC 2014 Istanbul.
- **General Co-chair or TP Co-chair** of the 5G Workshop in every Globecom since 2012.
- **Conference Organizer**: 100+ conferences in various capacities (Advisory Board, Executive Committee, Steering Committee, Technical Program Committee, etc.)
- **Former IEEE Editor**: *Trans. Commun.*, *Trans. Wireless Commun.*, *Commun. Survey & Tutorials*
- **Expert Reviewer**: Canadian & int'l funding agencies; tenure/promotion/PhD committees worldwide
- **Int'l Research Collaborations**: Currently with 15 universities worldwide.
- **Invited Seminar/Plenary/Talks + Tutorials**: 63 talks since 2012
(<http://www.sce.carleton.ca/faculty/yanikomeroglu/cv/TutorialsSeminars-HYanikomeroglu.pdf>)

4. Delay: --

5. Contributions to the Training of Highly Qualified Personnel (HQP) [Since 2011]

Completed Graduate Students: 9 PhD + 11 MASc (with thesis)

Current Graduate Students: 12 PhD + 2 MASc (with thesis) students

Current Paid PDFs: 3 (Szyszkowicz, El-Keyi, Bedeer)

Past Visiting Professors: 5 (A.H. Mohajerzadeh, Iran; Y. Gadallah, Egypt; I. Abualhaol, UAE; P.A. Dmochowski, New Zealand; M. Yilmaz, Turkey)

Past Paid PDFs: 5 (Saber, Gohary, Schoenen, Djukic)

Past Visiting PDFs and Scientists: 6 (Erdogan, Andreev, AlSobhi, Calabuig, Bulu, Schoenen)

Past Visiting PhD Students: 11 **Past Undergraduate Interns**: 5

Former HQP becoming Faculty Members: 4 former PDFs and 2 PhD students are now faculty members (Canada, Germany, UK, Saudi Arabia, Morocco).

- Three former PhD students received Carleton U Senate Medal for Outstanding PhD Thesis: R. Rashtchi (2016), A. Sharifian (2014), and A. Bin Sediq (2013). Another former PhD student J. Boyer received the Governor General's Medal and the University Medal (the highest two recognitions at Carleton) for his outstanding doctoral thesis in 2007.
- Many students in my group won NSERC CGS/PGS.
- One current PhD student (Rawan Alkurd) is an NSERC Vanier CGS holder; another current PhD student (Monirosharieh Vameghestahbanati) is an Ontario Trillium Scholarship holder.
- The first authors of almost all of the ~180 journal + conference papers I co-authored in the last 6 years are graduate students. The first inventors in almost all of my 25 patents are also graduate students.
- I won a number of awards for graduate mentorship, supervision, and teaching.