

2023 Nathaniel Sugerman Memorial Award

Gary Vergason

For leading the SVC in a time of great need.



Gary completed a 4-year Industrial Electrician apprenticeship at Borg-Warner in Ithaca, New York in 1977. At Borg-Warner, Gary obtained his first experience designing system controls and assembly equipment. Gary was introduced to PVD processes at Multi-Arc Vacuum Systems (MAVS) which later became IonBond at St. Paul, Minnesota from 1981 to 1984. Starting as an engineering technician, he moved on to project manager and then grew into the engineering manager responsible for the engineering of coating services and equipment manufacturing. Gary was the key designer of Multi-Arc's early arc source patents featuring the deposition source, ignition device, and specialty insulating seals and was responsible for the setup and startup of MAV's first remote toll coating center in Consett, England.

From 1984 to 1986, Gary was operations manager at the Cat Arc division of Perkin-Elmer in Eden Prairie, Minnesota. He oversaw the overall design of PVD coating systems using licensed arc source technology from Vac Tec (Vac Tec later became Vapor Tech) in Boulder, Colorado. These Cat Arc systems were the first known computer controlled PVD machines on the market.

Gary started Vergason Technology (VTI) in 1986 in his parent's barn, where he developed novel cathodic arc technology which was patented in 1991. This technology incorporated small discrete anodes to boost the operating voltage of the process which produced the lowest temperature (180 OC) tribological PVD coatings for temperature-sensitive substrates. VTI's first coating system was delivered in 1988, for coating bone prosthesis with hydroxyapatite. In 1989, VTI designed and installed the first known rapid cycle metalizer for the reflective coating of 3-dimensional polymer substrates (Ford High Mount Stop Lights). Cycling air-to-air in 37 seconds, the machine was placed next to the injection molding press, coating the parts right after molding and without paint base-coating (parts are the cleanest and have the least amount of water vapor at this point). This genesis (Press Side[®]) system launched a worldwide shift from large batch machines to smaller, fast-cycling PVD machines launching the ability of synchronous (LEAN) manufacturing. Production yields went from 80% to 99%+. This development sparked a seminal shift in the entire thin film coating industry. Hundreds of Press Side coating machines are installed around the world; all owing their genesis to a humble barn in upstate New York!

Gary was also a team member of the group that patented Super Chrome[®], a safe PVD alternative to electroplated hexavalent chrome. He was also involved with developing a patent-pending dual bank, filament device which automatically positions freshly loaded filaments for the next cycle, in less than 10 seconds. As of



The Nathaniel H. Sugerman Memorial Award

was established in 1992 to commemorate the enduring efforts of Nat Sugerman (1922–1991) in founding, nurturing, and supporting the Society of Vacuum Coaters (SVC). Nat founded Providence Metallizing Company in 1951 and was a Charter Founder of the SVC and Corporate Sponsor Founder.

"...he thoroughly believed in the SVC and how pleased and proud he would now be to see what a great organization it has become."

— Harold Gadon (retired, Providence Metallizing Company, Inc.)

The purpose of the **Nathaniel Sugerman Memorial Award** is to encourage and recognize distinguished achievement in one or more of the following endeavors:

- For distinguished services to SVC
- For noteworthy educational contributions to the vacuum and/or vacuum coating industry
- For outstanding technical achievement
- For creative innovation in the development of a product or process pertaining to the vacuum

January 2023, Gary is listed as the principal inventor on five (5) US patents, 17 papers/publications, and one chapter in a textbook on medical coatings.

Gary has been the recipient of numerous business and professional awards. Perhaps his most significant award (which coincidentally identifies exactly with his SVC ethos!) was the 1996 Small Business-person of the Year awarded by NY Governor George Pataki.

Gary's contributions to the management of the SVC cannot be understated. First elected as a Director in 2008, he served one three-year term and in 2009 organized the SVC's first topical conference (Advanced Coating Technologies for Corrosion/Erosion and Decorative Coatings). Gary became SVC Vice President in 2014 and led the SVC Executive Committee and Board of Directors through a soul-searching analysis of its management group at the time; the outcome pointed to a need to go in a new direction. Gary led the effort (and expended countless man-hours doing so) to transition the SVC first to a management contract with another professional organization and then on to the self-managed model (SVC 2.0) in 2017 that has increased the utility of the SVC to its stakeholders and significantly lowered the operating expenses of the Society. He was instrumental in setting up the personnel contracts and organizational structure for SVC 2.0 and the hiring of the first direct employee in the SVC's history. What seemed impossible in earlier days Gary led a "whole of Board" effort that was completed with a sense of urgency and competency.

Gary also played a key role in the transformative Enhanced Corporate Sponsor Program. He also conceived, structured, and funded the SVC Foundation's "Industry Scholarship" bringing technicians and engineers into the SVC tutorial instruction. It is hard, if not impossible to find anyone who has so tirelessly and unselfishly worked to promote, develop, and grow the SVC.

In 2001 the SVC Award Committee established the Mentor Award to recognize outstanding contributions to the development of vacuum coating technology or for special contributions to the Society. Since its inception, fifty-seven individuals have been honored with the SVC Mentor Award. This year, the SVC is proud to induct our 58th and 59th members to this august body of scientific, professional, and educational contributors.

2022 Mentor Award

Wolfgang Diehl

For his leadership and multiple contributions to research, development and manufacture, in the fields of coatings and surface technology and for his dedicated service to the SVC.



Wolfgang Diehl is Professor Extraordinaire for Surface Engineering and Thin Films in the Faculty of Engineering and the Built Environment at the Tshwane University of Technology in Pretoria, South Africa and a Visiting Professor in the Faculty of Arts, Computing, Engineering and Sciences ACES at Sheffield Hallam University, Sheffield, United Kingdom. After several years of his active SVC membership Wolfgang served as the SVC President in 2016 and 2017, was a member of the International Task Group and participated in several SVC Technical Advisory Committees (TACs).

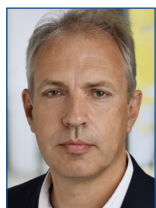
For more than 25 years Wolfgang has been involved in industrial and contract research work in laser physics, photovoltaics, and Plasma Enhanced Chemical Vapor Deposition. In 1974 he started his rich career at the AEG Telefunken Research Institute in Frankfurt/M in the field of laser research. In 1978 he joined the Battelle Research Institute in Frankfurt/M as a manager and senior scientist, developing Laser Remote Sensing Technology (LIDAPs). At the Battelle Memorial Institute in Columbus OH, USA he was Scientific Leader of international projects in the field of medicine, military, and atmospheric research. In 1993 he was co-founder and one of the presidents of the ANTEC Angewandte Neue Technologies company group. In ANTEC Solar GmbH, spin-off of ANTEC, he developed and implemented in 1998 the world's first 10 MW Cd-Te thin film production line for PV applications. He also started and managed CIS-Solar GmbH, another PV Company involved in CIS-Technology. In 1997 he started the companies ANTEC Oberflächentechnik GmbH in Germany and ANTEC Finiture S.R.L. in Italy, a PECVD technology organization focused for job coating of decorative parts, tools, automotive parts and constructing PECVD equipment. In 2003 Wolfgang joined the Fraunhofer Gesellschaft and became Deputy Director of the Fraunhofer Institute for Surface Engineering and Thin Films in Braunschweig, where he retired in 2016. Since 2011 he is appointed Professor Extraordinaire at the Tshwane University of Technology. He teaches a high-level postgraduate course on Surface Engineering and Thin Film Technology, and he established a PhD exchange program between Fraunhofer IST and the Tshwane University.

To honor his technical efforts and value the contributions of his leadership, it is with great pleasure that the SVC bestows on Professor Wolfgang Diehl the 2023 SVC Mentors Award.

2022 Mentor Award

Andreas Pflug

For his outstanding contribution in understanding plasma processes and technology by simulation and modeling.



Dr. Andreas Pflug is Head of Group Simulation and Digital Services at Fraunhofer IST (Braunschweig, DE). His focus is on simulation and modeling of plasma processes, components, and coating systems. Andreas has developed a PIC-MC code for plasma and process modeling. This code is licensed to renowned companies in the coating business and is well established in industry. His contributions and leadership have been pivotal in advancing the fundamental understanding of vacuum processes. Furthermore, these simulations can speed up development and improvement processes in large scale industrial processes.

Magnetron sputter deposition is a conceptually easy technique, but a closer look shows that the technique is based on a complex interplay between different entangled processes. Some parameters and processes are difficult to access by experiments. Hence, simulations provide a complementary pathway to get a better understanding of sputter deposition. The recent PIC-MC simulations by Andreas on the development of ionization zones (also known as "spokes") have shown excellent agreement with the experimental data. Consequently, the work of Andreas forms a bridge between industry and academic research, and permits a further advance in vacuum coating technology. The continuous contribution of Andreas to provide the international community with high level simulations of this process is hence a necessity.

To honor his technical efforts, it is with great pleasure that the SVC bestows on Dr. Andreas Pflug the 2023 SVC Mentors Award.