degree of smoothness reduces surface scattering at the fiber-cladding interface, reducing scattering-based transmission loss to negligible levels.

Further measuring transmission losses over an extended telecom wavelength band, the researchers suggest the resulting λ^{-4} dependence is associated with Rayleigh scattering in the bulk. By optimizing the annealing process, scientists could create inexpensive optical waveguides with less loss than currently available materials, according to the research team.

Polycrystalline silicon is an attractive material to use for optoelectronics and these advances only make it more so. In addition to their low cost, polycrystalline waveguides are easily integrated vertically on-chip and retain some of the electronic functionality of crystalline silicon. New, loss-minimized waveguides using this method could open the door to faster, more capable fiber communication devices.

Benjamin Scheiner

In Memoriam:

Robert L. Fleischer

Robert L. Fleischer, Research Professor of Geology at Union College, died of complications of cardiac amyloidosis on March 3, 2011 at the age of 80. He was well known for developing and applying the technique used for nuclear-track etching, and for explaining how small additions of elements strengthen pure solids.

Fleischer earned AB, AM, and PhD degrees at Harvard University in applied physics. He then became Assistant Professor of Metallurgy at the Massachusetts Institute of Technology (1956–1960), before moving to General Electric Research Laboratory in Schenectady, New York, during what he referred to as the "Golden Age" of research, where he remained until 1992. Following his time at General Electric, Fleischer was Research Professor of Earth and Environmental Sciences at Rensselaer Polytechnic Institute 1992–1997 and then joined Union College's Geology Department in 1997, where he stayed for the rest of his career.

One of Fleischer's great joys was learning about new areas of research, ones that he had not dreamed of entering. He and his colleagues designed the cosmic ray detector taken to the moon and back by the Apollo 16 astronauts, studied the damaging effects of cosmic rays on moon rocks, and dated meteorites and archeological specimens.

He published over 350 scientific papers and held 19 patents. His track work led to two companies founded by GE (Nuclepore—thin membranes with holes of cleanly specified sizes—and Terradex—radon measuring for home safety or for locating shallow deposits of uranium in the ground). Another commercial development (not commercialized by GE) was neutron radiation monitoring and mineral dating used in oil exploration to sense excessive heating in the earth—heating that would have destroyed any oil that might have been nearby. This use was by far the largest financial success—giving immense savings in wells not drilled.

Some of Fleischer's many awards include the American Nuclear Society's Special Award for Distinguished Service in the Advancement of Nuclear Science (1964), the U.S. Atomic Energy Commission's E.O. Lawrence Award (1971), and NASA's Medal for Exceptional Scientific Achievement (1973). Fleischer was presented with GE's R&D Center's Coolidge Fellowship Award (1972) for sustained technical contributions, and was elected to the National Academy of Engineering and the American Academy of Arts and Sciences. He was a fellow of the American Physical Society, the American Geophysical Union, the Health Physics (radiation protection) Society, the American Association for the Advancement of Science, and the American Society for Metals. He co-authored *Nuclear Tracks in Solids* with Buford Price and Robert Walker, wrote *Tracks to Innovation*, and co-edited book sets on intermetallic compounds with Jack Westbrook.

In 1995, Fleischer served as visiting scientist for *MRS Bulletin*, where he also served as guest editor that year of the December issue on ion tracks in solids. He had continued serving as an advisor for the publication and contributed a "Posterminaries" article in the January 2011 issue.

https://doi.org/10.1557/mrs.2011.189 Published online by Cambridge University Press