

Yurii Aronovich Goldberg (1939–2011)

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Yurii Aronovich Goldberg passed away on January 28, 2011. He was an eminent scientist, a doctor of physical and mathematical sciences, and a leading researcher at the Ioffe Physical Technical Institute of the Russian Academy of Sciences.

Goldberg graduated from the Leningrad Electrotechnical Institute (LETI) and started to work at the Nasledov Laboratory at the Ioffe Physical Technical Institute in 1963.

Goldberg became known in international science by virtue of his studies in the field of the physics of metal–semiconductor contacts.

It was believed that a barrier (rectifying) contact becomes ohmic as a result of formation of a heavily doped recrystallized semiconductor layer at the interface with metal. In this case, the potential barrier becomes tunnelingly transparent. However, Yu.A. Goldberg, in collaboration with B.V. Tsarenkov and E.A. Posse, experimentally showed that an ohmic contact arises as a result of contact of a semiconductor with a liquid metal even before the formation of a recrystallized semiconductor layer. It was established that the ohmic contact is formed due to the appearance of conducting shunts in the course of deposition of atoms of a liquid metal at the cores of edge dislocations.

Another scientific finding that brought fame to Goldberg consists in the establishment of an anomalously fast mechanism of near-surface recombination of photocarriers that arise as the surface is exposed to ultraviolet radiation. Yu.A. Goldberg and T.V. Blank called attention to the fact that an electron and a hole generated by far-ultraviolet radiation fly in the same direction and form an exciton. The latter features a high binding energy (~ 100 meV) and does not disintegrate; rather, it flies into the quasi-neutral bulk and recombines there. This is exactly the mechanism of catastrophic decrease in photocurrent in the far-ultraviolet region in semiconductors of gallium-arsenide type.

Goldberg was a person of very high ethical standards and deep understanding of life. He was able to influence the views of an interlocutor using two three phrases or merely through intonation. It is impossible to forget his charming optimism, refinement, and positivity. We have lost a highly educated, courageous, and nontrivially thinking man. Goldberg was a brilliant scientist and had a profound effect on his colleagues and pupils. May his memory live forever.

*O.V. Konstantinov and A.M. Samsonov
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Translated by A. Spitsyn