

## Hybrid resonant organic-inorganic Nanostructures for Optoelectronics

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In hybrid resonant organic/inorganic nanostructures there is a combination of good charge transport properties of inorganic semiconductors and good light-emitting properties of organic substances (high quantum yield, colour detuning). Also it has the excitons of small radius for typical organic materials and Wannier-Mott excitons for inorganic semiconductors having large radius excitons and creating the basis for modern semiconductor industry. Organic and inorganic component can have electronic excitations with nearly equal energies and such contacting structures collect the best properties of both classes of materials in hybrid structure. Theoretically such structures have been investigated earlier. At pumping of such structures we can have the irreversible non-contact and nonradiative energy transfer from inorganic quantum well to organic emitting material. Important that in the beginning of this century such effect indeed was observed and continue to be observed for many different organic-inorganic nanostructures. In all earlier considered hybrid structure it was assumed that the energy of excitons in semiconductor layer is large in comparison with the

energy of exciton in the organic layer and pumping the energy was transferred from semiconductor to organics. In our recent papers we considered the hybrid structures where energy of exciton in organic layer is large in comparison with energy of exciton in semiconductor. The properties of hybrid structure in this case are very different and in this talk the results of a new approach arising with pumping of semiconductor thin film through overlayer is going to be demonstrated.

### Speaker Biography

V M Agranovich received PhD in Kiev, degree of Doctor of Science from Institute of Chemical Physics (Moscow) and in 1963 he received the Professor Diploma from VAK (Commission of Government). Between 1956 and 1969 he worked as a Head of Theoretical Laboratory of Physical- Energetical Institute in Obninsk and in 1969 he joined the newly founded Institute of Spectroscopy of the Russian Academy of Science (ISAN) as Head of the Theoretical Department. He was in this position during 40 years and now he is a Principal Investigator of ISAN. He published about 400 papers, four books and many invited chapters in contributed volumes. For about 20 years he was the regional Editor of Solid State Communications and before Perestroika he was main organizer of bilateral workshops and conferences USSR-USA, USSR-Germany.

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