UNIVERSAL METHOD FOR EXCITING THE LUMINESCENCE OF MOLECULES ISOLATED IN SOLID XENON.

E. B. GORDON, *Institute of Problems of Chemical Physics RAS, Chernogolovka, 142432 Russia*; V. D. SIZOV AND V. I. MATYUSHENKO, *Institute of Energy Problems of Chemical Physics RAS, Chernogolovka, 142432 Russia.*.

Isolation of molecules in inert matrices is saving them from external perturbers, but simultaneously restricts the tools for their useful effects. Only light seems to be able to induce a luminescence inside transparent matrix, provided the molecules possess intensive absorption bands. Meanwhile the matrices of rare gases are "transparent" for excess electrons as well, and we have shown[a], that when drifting in electric field these electrons acquire the energy up to 8 eV which is sufficient for electronic excitation of both impurities and the matrix itself. By using the photosensitive cathode we have managed to create the electric discharge inside solid Xe, and the universal and high-performance (due to drift nature of motion of the electron its path in the sample is 10^3 times longer than a sample thickness) technique for exciting the luminescence of matrix-isolated species has been elaborated in such a way. The spectra of two-center exciton emission in solid Xe and the spectra of electroluminescence of oxygen and nitrogen stabilized in solid xenon will be reported.

[a] A. Usenko, G. Frossati, and E.B. Gordon, Phys. Rev. Lett., 90, 153201 - 1 - 4 (2003).