The evolution of quantum dot research and the Nobel prize

Gary Hodes[1], David Cahen[1] and Mercouri Kanatzidis[2]

[1] Dept. of Molecular Chemisty and Materials Science, Weizmann Institute of Science, Rehovot 76100, Israel.

[2] Dept. of Chemistry, Northwestern University, Evanston, Illinois, USA.

The Nobel prize in chemistry for 2023 was given "for the discovery and synthesis of quantum dots" (QDs). Our interest here is in the first of these descriptors, the discovery. In their advanced scientific background for this discovery, the Nobel committee gave an extensive history of the build-up to the 1981 paper of Yekimov and Onushchenko on size quantization of CuCl nanoparticles in a glass matrix, which was considered the first experimental description of QDs. Earlier relevant papers they discussed were either theoretical (beginning, as mentioned in the Nobel committee's scientific background, in 1937, or dealt with thin films.

This talk discusses several experimental papers, predating the above 1981 paper which we consider highly relevant to the experimental discovery of QDs and are either not mentioned in the committee's history or are mentioned but, in our opinion, downplay their importance.