

T_CSUH Bi-Weekly Seminar

Texas Center for Superconductivity at the University of Houston

Prof. Paul C. W. Chu

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“The Newly-Discovered Fe-Based Layered High Temperature Superconductors”

Friday, April 11, 2008

Room 102, University of Houston Science Center

12:00 Noon – 1:00 p.m.

Abstract

Built upon insight gained from cuprate high temperature superconductors and work on the equiatomic quaternary rare-earth transition metal oxypnictide superconductors, ROTP with R = rare-earth, O = oxygen, T = transition metal, and P = pnictogen over the last few years, Hideo Hosono's group in the Tokyo Institute of Technology reported in late February of this year that they achieved superconductivity with a T_c of 26 K in F-doped LaOFeAs. The report has generated great excitement. Last week, three groups in China achieved a T_c = 41 K in F-doped CeOFeAs, a T_c = 43 K in F-doped SmOFeAs, and a T_c = 50 K in F-doped PrOFeAs, respectively. Tens of papers flooded the scientific community in a very short period of time, due to the possible scientific implications on high temperature superconductivity and the intriguing physics involved. In this talk, I will present experimental results from our group on some of these compounds at T_CSUH and discuss the similarities and differences between the cuprate and pnictide superconductors, after briefly presenting the history on and summarizing the present status of the study on superconducting ROTP.

Bio

Professor Paul C. W. Chu is currently serving as Professor of Physics, T. L. L. Temple Chair of Science, and Executive Director of the Texas Center for Superconductivity at the University of Houston. He also serves as President of the Hong Kong University of Science and Technology. He and his colleagues achieved stable superconductivity at 93 K (-180°C) above the critical temperature of liquid nitrogen (-196°C), a major advancement in modern science. Later, they again obtained stable superconductivity at a new record high temperature of 164 K (-109°C) in another compound when it was compressed. Prof. Chu remains actively engaged in the basic and applied research of high temperature superconducting and related materials and technologies, and has published over 550 papers. He is a member of the U.S. National Academy of Sciences, the AAAS, the Chinese Academy of Sciences (Beijing), the Academia Sinica (Taipei), the Third World Academy of Sciences, The Electromagnetic Academy and the Russian Academy of Engineering. In 2007, he was appointed as a Member of the U.S. President's Committee on the National Medal of Science, responsible for the selection of recipients for this top scientific honor in the U.S. Prof. Chu's numerous awards include the National Medal of Science, the International Prize for New Materials, the Comstock Award, the Texas Instruments' Founders' Prize, the John Fritz Medal, and the Freedom Foundation National Award.

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