

Chapter 3 Science of the Cold Fusion Phenomenon

“The man of science must work with method. Science is built up of facts, as a house is built of stones; but an accumulation of facts is no more a science than a heap of stones is a house. Most important of all, the man of science must exhibit foresight.” Henri Poincaré, ***Science and Hypothesis***, p. 141 (1902). Translated by W.J.G., Dover Publications Inc. 1952. Library of Congress Catalog Card Number 53-13673.

“I have always considered science to be a dialogue with nature. As in a real dialogue, the answers are often unexpected and sometimes astonishing.” Ilya Prigogine, ***The End of Certainty – Time, Chaos, and the New Laws of Nature***, p. 57, The Free Press, New York, 1997, ISBN 0-684-83705-6.

As is explained in the previous Chapter and summarized in Section 2.15, a huge pile of experimental data of the cold fusion phenomenon (CFP) obtained in these 16 years from 1989 is puzzling from the common sense of modern physics established in the last century if we interpret them only from knowledge and concepts obtained in nuclear physics and solid-state physics by the end of the century.

The science of CFP has not been accomplished and is in a process progressing at present. The description given in this Chapter, therefore, is at most by models with premises based on experimental facts or is at best a first step of quantum mechanical investigations on oversimplified conditions.

There are two sources of confusion in the theoretical approach to CFP. The first is in the enthusiastic researchers and proponents of CFP; they accept some of the experimental data sets according to their tastes and are apt to swallow up explanations of the data sets sometimes without scrutiny. The second is in the critics having prejudice against experimental data of CFP implanted by scandalous events in a few years from 1989; they have deep disbelief in the experimental data and dislike thoughtless acceptance of ridiculous explanations often used by proponents to explain events in CFP neglecting principles of modern physics established in the 20th century.

Therefore, it is desirable to perform scientific investigations of CFP with the same terminology as that used in other branches of modern physics if we hope that the science of CFP is developed as a part of 21st century physics succeeding modern physics of the 20th century.