

There are a number of important publications that are not contained in the LENR library. References to many of these papers can be found in individual papers, but many are important papers published in the ordinary science literature. Categories addressed are

- Relation between different ways of treating periodic systems:

P. W. Anderson, "More is Different", *Science* **177**, 393 (1972). Subtitle: "Broken symmetry and the nature of the hierarchical structure of science: "... the state of the system, if it is to be stationary, must always have the same symmetry as the laws of motion that govern it. A reason may be put very simply: In quantum mechanics there is always a way, unless symmetry forbids it, to get from one state to another. Thus if we start with any one unsymmetrical state, the system will make transitions to others, so only by adding up all possible unsymmetrical states in a symmetric way can we get a stationary state." Adding up Wannier states in a symmetric way is required to describe a Bloch state, which reflects periodic symmetry. This process was used in LENR library paper [ChubbTAtheionband.pdf](#). Sections 7 and 8 discuss principles that determine wave function overlap, as required for cold fusion.

- Experimental evidence that excited hydrogen surface states are quantum delocalized:

Puska, M. J., J. R. M. Nieminen, M. Manninen, B. Chakraborty, S. Holloway, and J. K. Norskov, "Quantum Motion of Chemisorbed Hydrogen on Ni Surfaces", *Phys. Rev. Lett.* **51**, 1081-1084 (1983).

Puska, M. J. and R. M. Nieminen, "Hydrogen chemisorbed on nickel surfaces: a wave mechanical treatment of proton motion", *Surface Science* **157**, 413-435 (1985).

Astaldi, C., A. Bianco, S. Modesti, and E. Tosatti, "Vibration Spectra of Atomic H and D on Cu(110): Evidence of H Quantum Delocalization", *Phys. Rev. Lett.* **68**, 90-93 (1992).

- Evidence that bulk metal hydrides have an energy storage mode that is not available in pure metals. Evidence that bulk metal hydrides are subject to internal transport of energy stored in these excitation modes and that such energy transport can cause sudden deloading to distant metal hydride surfaces:

I.P. Chernov, Yu.I. Tyurin, Yu.P. Cherdamtzev, M. Kroning, and H. Baumbach, "Hydrogen migration and release in metals and alloys at heating and radiation effects", *J. Int. Hydrogen Energy* **24**, 359 (1999). "It was shown that radiation stimulates the intense release of electrolytically introduced deuterium from stainless steel, Pd and Nb."

Yu. Tyurin and I. Chernov, "Non-equilibrium release of atomic hydrogen from metals under irradiation", *J. Int. Hydrogen Energy* **27**, 829 (2002). "The release of atomic hydrogen isotopes and positively charged ions under irradiation by

electrons in pre-threshold region of metals saturated by hydrogen isotopes has been studied. The mechanisms of non-equilibrium exchange and release of atomic hydrogen as well as positive ions from metals are discussed, ..."

- Fabrication protocol and material characterization of metal oxide + nanometal composite catalytic powder. Related papers:

S Yamaura, K. Sasamori, H. Kimura, A. Inoue, Y. C. Zhang, Y. Arata, "Hydrogen absorption of nanoscale Pd particles embedded in ZrO₂ matrix prepared from Zr-Pd amorphous alloys", *J. Mater. Res.* **17**, 1329 (2002). This paper gives the details need for fabricating the material, measurements of its hydrogen absorption properties, Bragg characterization of the internal powder lattice structure by x-ray scattering and electron scattering, a dark field TEM image showing the distribution of nanograins of Pd inside the ZrO₂ matrix, control studies with ZrO₂ + nanoAu showing that the ZrO₂ is not hosting the absorbed hydrogen, and speculation as to where the bulk of the extra hydrogen may be hosted.

G. Barcaro, A. Foprtunelli, G. Rossi, F. Nita, and R. Ferrando, "Epitaxy, Truncations, and Overhangs in Palladium Nanoclusters Adsorbed on MgO(001)", *Phys. Rev. Lett.* **98**, 156101 (2007). "Using semiempirical potential and density functional calculations the transition of fcc clusters with (001) epitaxy is shown to take place in the size range $10 < N < 15$ atoms". This paper seems to support the view that a degree of disorder in metal layers near a metal oxide-Pd interface layer can lead to a strongly bound metal surface layer in epitaxy fit onto a stable oxide crystal surface. The adjacent disordered layers would seem likely hosts for interstitial deuteride atoms. The highly stable epitaxy interface is a likely host for 2-dimensional Bloch symmetric deuterium, as needed for radiationless cold fusion.

K. J. Franke, P. Gille, K.-H. Rieder, and W. Theis, "Achieving Epitaxy between Incommensurate Materials by Quasicrystalline Interlayers", *Phys. Rev. Lett.* **99**, 036103 (2007). "It is demonstrated that due to their higher number of reciprocal lattice basis vectors (exceeding three), quasicrystals can provide interlayers linking incommensurate materials." "AlAs islands grow epitaxially on decagonal Al_{171.8}Ni_{14.8}Co_{13.4} quasicrystals."