# Hydrogen Reacted Nickel Electrodes for Nuclear Power-Cell Manufacturing by Low Energy Nuclear Reactions (LENRs)

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It is shown for the possibility of the nickel based power source comparing to the conventional Low Energy Nuclear Reactions (LENRs) using palladium-platinum electrode structure. S. Focardi and F. Piantelli used hydrogen gas in combination with nickel rods [1]. For realization of this result, the commercial company opens as Defkalion Green Technologies S.A. in Greece where they used the nickel based electrode [2]. The proton particle is described as the irradiated ion beam. In this work, several variables are investigated for the ion-radiation interactions. For simulations, the Stopping and Range of Ion in Matter 2008 code system is used to show that the ion dose is changed to the space of the atomic lattices [3].

Using the packing efficiency, the value of the face centered cubic (FCC) structure is as follows,

$$\frac{4\times\frac{4}{3}\pi r^3}{16\sqrt{2}r^3}=\frac{\pi}{3\sqrt{2}}=0.7405 \quad (1)$$

Hence, the 25.99 % (=1 – 0.7405) is vacant volume of the atomic structure. The lattice space gives the place for the lattice squeezed nuclear reactions, which could be assumed in the nanostructure. Therefore, the packing efficiency could be related with the nuclear reaction of squeezing.

Using SRIM simulations, Fig. 1 shows the hypothetical configuration of the LENR where the lattice shows the room for the nuclear reactions. So, the small space of the lattice could be assumed as the space for nuclear reactions. The Fig. 2 shows the vacancies of the ion in the lattice structures.

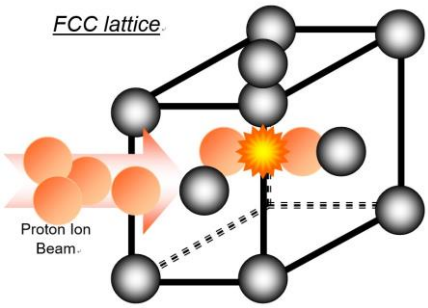


Fig. 1. Hypothetical simplified configuration to the nickel layer.

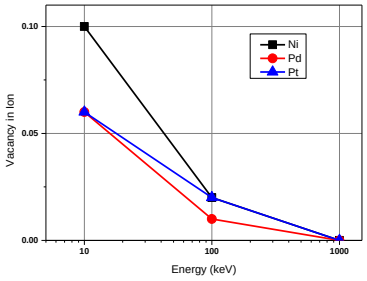


Fig. 2. Vacancy in the hydrogen beam injection of the LENR in the FCC lattice.

This work gives the investigation of the possible LENR behaviors in the molecular level structure. Following the new energy power source of the LENR, the commercialization needs the better efficiency as the new power-cell.

This study was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea Ministry of Science and ICT (NRF2020M2B5A111090811).

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