

This paper can be downloaded at the web site of the Japanese Journal of Applied Physics, <http://jjap.ipap.jp/online/>. Anyone can register and download papers there at no cost.  
This paper is at:

<http://jjap.ipap.jp/journal/pdf/JJAP-38-7A/L774.pdf>

**Jpn. J. Appl. Phys. Vol. 38(1999) L774-L776**  
**Part 2, No. 7A, 1 July 1999**  
**DOI : 10.1143/JJAP.38.L774**

## **Observation of Anomalous Heat Release and Helium-4 Production from Highly Deuterated Palladium Fine Particles**

Yoshiaki Arata and Yue-Chang Zhang

*Cooperation Research Center for Advanced Science and Technology, Osaka University,  
11-1 Mihogaoka, Ibaraki, Osaka 567-0047, Japan*

(Received April 22, 1999; revised manuscript received May 17, 1999; accepted for publication May 19, 1999)

### **Abstract:**

Observations were made of the anomalous production of  $^4\text{He}$  atoms as well as the anomalous heat release when Pd fine particles are highly deuterated inside an enclosed Pd metal vessel used as a cathode in electrolysis of  $\text{D}_2\text{O}$ . A mass analysis of the remnant Pd powders after the 2000-hr heat production revealed substantial production of  $^4\text{He}$  atoms.

### **Keywords:**

double-structure cathode, deuterated Pd, Pd black, electrolysis, excess energy,  $^4\text{He}$  production