

Research of a Gas Phase under Electrical Explosion of the Titan Foil in Liquid

Leonid Irbekovich Urutskoev^{a,b}, Dmitry Vitalievich Filippov^{a,b},
Anri Amvrosievich Rukhadze^c, Vadim Pavlovich Bystrov^c, Yury Petrovich Dontsov^d,
Victor Semionovich Parbuzin^e, and Alexandr Vvasilievich Steblevsky^f

^a RECOM, National Research Center 'Kurchatov Institute', Moscow, Russia

^b Moscow State University Of Printing Arts, Moscow, Russia

^c General Physics Institute (Russian Academy Of Sciences), Moscow, Russia

^d National Research Center 'Kurchatov Institute', Moscow, Russia

^e Moscow State University Department of Chemistry, Moscow, Russia

^f Institute of Inorganic Chemistry, Moscow, Russia

Reprint requests to D. V. F.; E-mail: filippov-atom@ya.ru

Z. Naturforsch. **65a**, 573 – 590 (2010); received October 1, 2009

Experimental studies of pulsed electric explosion of thin titanium foils in water with discharge power of ~ 0.2 GW are described. The production of a considerable amount of molecular hydrogen is revealed whose origin can be explained neither by water decomposition nor by known chemical reactions. A nuclear mechanism of occurrence of the observed molecular hydrogen upon electric explosion is hypothesized. Emphasis is laid on some measurements confirming the hypothesis.

Key words: Electrical Explosion; Hydrogen.