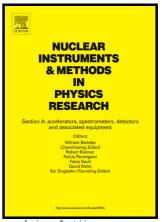
Author's Accepted Manuscript

Diamond detectors with laser induced surface graphite electrodes

M. Komlenok, A. Bolshakov, V. Ralchenko, V. Konov, G. Conte, M. Girolami, P. Oliva, S. Salvatori



www.elsevier.com/locate/nima

PII: S0168-9002(16)30943-3

DOI: http://dx.doi.org/10.1016/j.nima.2016.09.019

Reference: NIMA59317

To appear in: Nuclear Inst. and Methods in Physics Research, A

Received date: 3 August 2016 Revised date: 19 August 2016 Accepted date: 8 September 2016

Cite this article as: M. Komlenok, A. Bolshakov, V. Ralchenko, V. Konov, G. Conte, M. Girolami, P. Oliva and S. Salvatori, Diamond detectors with lase induced surface graphite electrodes, Nuclear Inst. and Methods in Physic Research, A, http://dx.doi.org/10.1016/j.nima.2016.09.019

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

ACCEPTED MANUSCRIPT

Diamond detectors with laser induced surface graphite electrodes

M. Komlenok¹, A. Bolshakov^{1,2}, V. Ralchenko^{1,2,3}, V. Konov^{1,3}

¹A.M. Prokorhov General Physics Institute, Russian Academy of Sciences, 38 Vavilova Str., 119991 Moscow, Russia

G. Conte^{1,2}, M. Girolami², P. Oliva^{3,4}, S. Salvatori³

¹Department of Sciences, University Roma Tre and INFN, Via Vasca Navale, 84 – 00148 Rome, Italy

Abstract

We report on the response of metal-less CVD polycrystalline-diamond pixel sensors under β -particles irradiation. A 21×21 array of 0.18×0.18 mm² pixels was realized on one side of a 10.0×10.0×0.5 mm³ polycrystalline diamond substrate by means of laser induced surface graphitization. With the same technique, a large graphite contact, used for detector biasing, was fabricated on the opposite side. A coincidence detecting method was used with two other reference polycrystalline diamond detectors for triggering, instead of commonly used scintillators, positioned in the front and on the back of the sensor-array with respect to the impinging particles trajectory. The collected charge distribution at each pixel was analyzed as a function of the applied bias. No change in the pulse height distribution was recorded by inverting the bias voltage polarity, denoting contacts ohmicity and symmetry. A fairly good pixel response uniformity was obtained: the collected charge most probable value saturates for all the pixels at an electric field strength of about

²Harbin Institute of Technology, 92 Xidazhi Str., 150001 Harbin, P.R. China

³National Research Nuclear University "MEPhI", Kashirskoye shosse 31, 115409 Moscow, Russia

²CNR-ISM, Institute for Structure of Matter, National Research Council, Via Salaria km 29,300 - Montelibretti, Italy

³University Niccolò Cusano, Via don Carlo Gnocchi, 3 - 00166 Rome, Italy

⁴Mediterranean Institute of Fundamental Physics 'MIFP' - Via Appia Nuova 31, 00040 Marino (Rome), Italy

Download English Version:

https://daneshyari.com/en/article/8167978

Download Persian Version:

https://daneshyari.com/article/8167978

<u>Daneshyari.com</u>