



Contribution ID: 150

Type: Oral presentation

Parametric X-ray Radiation from Powders

Monday, 24 September 2018 16:15 (15 minutes)

Parametric X-ray Radiation (PXR) from a tungsten powder was registered during the interaction of the target with a 7 MeV electron beam. The tungsten powder presents a purity of 99,987 % and is constituted of crystallites which average size is between 0.8 and 1.7 μm . The radiation was registered by silicon drift detectors under observation angles of 150° and 180° regarding the velocity of the incident electrons. PXR peaks from the crystallographic planes (110), (200), (211), (220), (310) и (222) were clearly observed simultaneously. The experimental results show a good agreement with the theory [1] in both geometries for all the PXR peaks for the first time. In previous works, the influence of texture [2,3] and composition of the target [4] caused a disagreement of the observed relative intensity of the PXR peaks with the theory.

The work was supported by the grant of the President of Russia for young doctors of sciences MD-5748.2018.2, a Program of the Ministry of Education and Science of the Russian Federation for higher education establishments, Project No. 3.1631.2017/4.6 and by the project No. PIJ-16-03 of the Escuela Politécnic Nacional.

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Session Classification: S2.1 Channeling & Radiations in Various Fields