

A.I. Grabchenko, D.V. Romashov, D.O. Fedorenko, A.G. Mamalis, D. Lagoudas,
V.A. Fedorovich and T. Baxevanis

Simulation of the effect of sintering on the integrity of diamond grains in grinding wheels

ABSTRACT. This paper focuses on theoretical studies of the process of manufacturing diamond abrasive tools and of diamond grinding through 3D modelling of the stress–strain state of the components of the diamond layer of the grinding wheel. Modelling of the sintering process of diamond grinding wheels with metal-based binders is used in order to determine the conditions needed to maintain the integrity of the diamond grains in the diamond layer.

Keywords: binder, destructive stress, diamond grains, finite element method, metal inclusion, sintering

Nanotechnology Perceptions **10** (2014) 42–53