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MATERIALS SCIENCES AND ENGINEERING

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Microstructure evolution and sintering kinetics of ZnO

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The aim of this paper was to analyse the sintering kinetics and microstructure evolution of ZnO. Powder was isothermally sintered (15, 30, 60, 90 and 120 minutes) in the temperature range from 800 to 1200^{o}C. The values of Lenel parameter were used to analyze both densification and mass transport processes. Scanning electron microscopy was performed in order to determine the microstructure evolution and dependence of everige grain size on temperature and time of sintering. These results will enable development of new phenomenological equations that can be applied in analyses of sintering kinetics.

Keywords: ZnO, Sintering, Kinetics.

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Pulse plasma processing as a candidate technique for surface treatment of wind turbine components

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Modern wind turbines construction is characterized by constantly increasing electrical power. The mandatory request of constant frequency of produced electricity output is contradictory to the variable wind turbine rotation frequency. The matching of wind turbine and electrical generator rotation frequencies can be achieved by a relatively complicated transmission gear box system or by power electronic system which eliminates matching gear box. The gear components must be resistant to different types of wear and to dynamic and static load, as well as to be corrosion resistant especially in off shore wind parks and to have acceptable noise emission. Unipolar pulse plasma was demonstrated to be efficient in diffusion and deposition mode of operation which combination gives the opportunity to meet the requirements of materials for wind turbine gears manufacturing, as well as for large size component treatment.