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The analysis of the technical, ecological and economical aspects of utilizing biomass waste for the purposes of producing energy and microporous carbonaceous adsorbents

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Abstract

The wood processing industry and the carpentry industry as well as food processing industry have a huge potential of biomass waste, which can be successfully used for the production of energy and porous materials used in environmental protection, energy sector, chemical technology and others. The work offers an unique analysis of the technical, ecological and economical aspects of utilizing biomass waste for the purposes of production energy and microporous carbonaceous adsorbents such as activated carbons. Particular attention has been paid to a number of problems and controversies regarding these issues, mostly due to the specific physical and chemical properties of biomass waste. The optimal method of utilizing biomass waste proposed in the work is using it for the purposes of producing energy in cogeneration systems as well as use biomass waste for the production of activated carbons. The waste materials of the timber and carpenter industry can yield high quality activated carbons and their derivatives, i.e. monoliths of active carbons that may be applied widely in many industries and in everyday life. The arguments for the use of biomass waste for the production of activated carbons include relatively low cost of production, easy accessibility of the raw material and its renewability.

Biography

Dr. hab. eng. Mirosław Kwiatkowski in 2004 obtained Ph.D. degree at the AGH University of Science and Technology in Krakow (Poland), and in 2018 D.Sc. degree at the Wrocław University of Technology (Poland). His published work includes more than 45 papers in reputable international journals and 100 conference proceedings. He is the editor in chief of The International Journal of System Modeling and Simulation (United Arab Emirates), an associate editor of Micro & Nano Letters Journal (United Kingdom) and a member of the organizing committees many conferences in Europe, Asia and USA, as well as a regular reviewer in a reputable scientific journals.

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