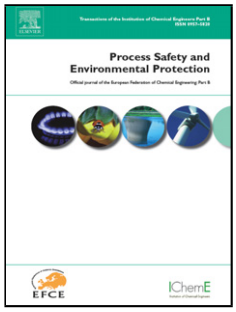

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Prediction of spontaneous combustion in the coal stockpile based on an improved metabolic grey model

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Graphical Abstract:

The paper designed an information integration system for prediction of the spontaneous combustion in the coal stockpile, which is characterized by real-time data acquisition, temperature cloud field formation and parameter prediction via ZigBee wireless network and industrial laser scanner, along with the ABC-MGM(1,1) hybrid model of the moving GM(1,1) and Artificial Bee Colony (ABC) algorithm. In order to enhance the short-term prediction accuracy, a moving GM(1,1) (MGM) scheme has been provided by constantly modifying the data input; and the generation coefficient of MGM(1,1) model has been optimized by ABC algorithm.