**Co-combustion characteristics of coal-Scenedesmus microalgae blends and their resulting ash**

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**Supplementary Data**

The distributed activation energy model originally developed by Vand [1], and was improved by Pitt [2], Anthony [3] and Miura [4]. It is used to calculate the kinetic parameters during pyrolysis or combustion processes of biomass and coal and so on. Not only the average activation energy but also the variation trends during combustion processes can be obtained using this model. It assumes that a number of parallel and irreversible first order reactions that have different kinetic parameters occur simultaneously. The combustion of the experimental samples can be described using Equation (1) [5]:

 (1)



Fig S1: Plot of ] versus 1/T of coal combustion calculated by one step integral method.



Fig S2: Plot of ] versus 1/T of Coalgae® 5% combustion by one step integral method.



Fig S3: Plot of ] versus 1/T of Coalgae® 10% combustion by one step integral method.



Fig S4: Plot of ] versus 1/T of Coalgae® 15% combustion by one step integral method.



Fig S5: Plot of ] versus 1/T of Coalgae® 20% combustion by one step integral method.



Fig S6: Plot of ] versus 1/T of Coal combustion calculated by three step integral method (500-530 K).



Fig S7: Plot of ] versus 1/T of Coal combustion calculated by three step integral method (850-870 K).



Fig S8: Plot of ] versus 1/T of Coal combustion calculated by three step integral method (680-700 K).

**References**

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