

Structural studies of Permian “Gondwana” coals of Barapukuria by infrared spectroscopy

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Abstract : Infrared spectroscopy is well suited for the characterization of highly absorbing materials particularly coal as it can provide information on both the organic and inorganic species of the coal matrix. The application of IR technique for the characterization of coal and mineral has been discussed in this paper. From the IR investigations Bangladeshi coals are revealed as higher rank of Bituminous type with high calorific value and low ash and minerals are basically silicious nature. Coal samples are carbonized at different temperatures under argon atmosphere and examined by IR. Under carbonization, increase in crystallite size or an increase in ordering of aromatic ring occurs, indicating the initial stage of graphitization. Stacking height and crystallite dimensions are also calculated by X-ray diffraction study.

Keywords : Infrared spectroscopy, bituminous coal, X-ray diffraction

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1. Introduction

Coal is an important natural resource and much effort has been given to make the best use of it. Fundamental scientific research has been going on for understanding the structure of coal for augmenting its technical use. The great potential of coal lies in its utilization in power and heat generation and in chemical industries.