

APPLICATION X-RAY CT SCAN TOMOGRAPHY TO IDENTIFYING COAL CLEATS IN TANJUNG FORMATION, PASIR BASIN, SOUTHEAST KALIMANTAN, INDONESIA

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ABSTRACT

The network of natural fractures in the coal referred to as cleat; is one phenomenon that should be examined in the exploration of CBM. The CT scan is a non-destructive technique with wide applications in various geological disciplines as in coal exploration. From the Tanjung coal formation by CT scan techniques can be identified different types of the coal cleat which reflecting the geological processes during coal formation. By study CT scanning tomography from Tanjung Formation coal can be identified three types of natural fractures i.e. face cleats, butt cleats and fracture. The shape of cleats is dominated by a curved line, while the straight line shape was rare. The cleats origin in Tanjung Formation was mainly controlled by tectonic activity which indicated by the dominantly curved shape of cleats in coal samples.

KEYWORDS: X-Ray, CT Scan, Cleat, Tanjung Formation, Coal, Pasir Basin

INTRODUCTION

The development of CT (computed tomography) known starting in 1895 when Wilhelm Conrad Röntgen discovered X-rays (X-rays). Röntgen showed that X-rays are generated when light interacts with the cathode material. Because of its nature is not known, at the time, was given the name 'X-rays'. After this discovery, the science of radiology developed into a sub-specialty in the field of health in the first decade of 1900. The application of CT for the first commercial application in the late 1960s and early 1970s, when Cormack and Hounsfield, who received the Nobel Prize for Medicine in 1979. Furthermore, CT applications developed in science outside of the medical field. 1974 CT scanning for the first time applied to study paleontology [1].

Mechanical CT Scan Computed Tomography is a non-destructive method that can provide structural information on the coal such as cleats, micro fracture, porosity, mineral filler and coal matrix) in 3D. In the 1980s, several studies have been conducted [2, 3] reported the application of CT for evaluation in the field of petrology, coal cleat analysis and reservoir oil. More recently, CT technique has shown good prospects for application in coal petrography and petrophysical study. Several studies on samples of coal [4, 5 and 6] showed satisfactory results in research porosity, differentiating pores, fractures, cleats and minerals from coal matrices. The studies of CT scan in coal are still not enough, especially in natural network of coal cleat. The Tanjung coal formation exposed in Muara Samu and surrounding area, Pasir Basin, Indonesia is interesting to study the distribution pattern of natural fractures in relation to the use of micro bacteria in the enrichment of coal bed methane.