

## **PERFORMANCE OF PIEZO-ELECTRIC SENSOR FOR THE MONITORING OF ROOF FALL HAZARD IN UNDERGROUND COAL MINE**

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### **Abstract**

Roof fall in the underground coal mines are commonly faced problem due to uncertainties which arise from geological and stress conditions and mine environment, make the control of roof fall hazards difficult. This paper examines the feasibility of employing the new generation piezoelectric sensor for comprehensive monitoring of roof fall event in underground coal mine. Detailed experimental studies were conducted in laboratory and as well as in field. In laboratory the rock specimens were subjected to cyclic loading and their conditions were continuously monitored. The piezoelectric transducers detected cracks even before they reached macroscopic dimensions. The results of this experimental study demonstrate the superior performance and cost-effectiveness of the new generation smart technologies for monitoring rock-structures.

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