

## IGA-DFNN在瓦斯浓度预测中的应用

作者: 李文娟, 付华, 孟祥云, 王桂花, 王灿祥

单位: 辽宁工程技术大学

基金项目: 国家自然科学基金项目

摘要:

为了准确预测采煤工作面的瓦斯浓度, 提出一种IGA-DFNN瓦斯浓度预测方法。用无线传感网络采集工作面瓦斯浓度数据作为样本, 数据通过小波分析降噪滤波预处理。采用IGA算法对DFNN网络参数优化, 建立了瓦斯浓度的预测模型。通过MATLAB仿真研究表明, 经过IGA算法优化DFNN网络比单纯的DFNN网络具有更快、更准确的预测功能, 可以为防治煤矿瓦斯积聚提供更好的理论支持。

关键词: IGA算法; DFNN网络; 无线传感网络; 小波分析; 瓦斯浓度预测

## Application of IGA-DFNN for Predicting Coal Mine Gas Concentration

**Author's Name:**

**Institution:**

**Abstract:**

In order to predict coal face gas concentration accurately, a method with IGA-DFNN was proposed for predicting gas concentration. The simple of gas concentration is collected by wireless sensor networks, and the data is filtered and denoising through wavelet analysis. Use IGA algorithm to optimize the parameters of the DFNN network, then set up the prediction model of concentration. Through the simulation of the MATLAB show that, the DFNN network optimized by IGA algorithm has more faster and accurate effect in predicting the gas concentration than simple DFNN network. It can provide better theoretical support for the prevention and control of gas accumulation in coal mine.

**Keywords:** IGA algorithm; DFNN network; wireless sensor networks; wavelet analysis; gas concentration predicting

投稿时间: 2013-11-19

[查看pdf文件](#)