## 475.

Title: Numerical study of threshold gain behavior for a THz random laser in a two-dimensional active disordered medium with a three-level atomic system

Author: Liu, Y (Liu Yong); Liu, JS (Liu JinSong); Wang, KJ (Wang KeJia)

Source title: CHINESE SCIENCE BULLETIN

Volume: 56 Issue: 25

pages: 2664-2667

Publication year: SEP 2011

Abstract: By numerically solving Maxwell's equations and rate equations in a two-dimensional (2D) active random media made of ruby grains with a three-level atomic system, the threshold gain behavior for a THz random laser is investigated. The spectral intensity variation with the pumping rate is calculated for both the transverse magnetic (TM) field and the transverse electric (TE) field. The computed results show that THz random lasing could occur in a 2D disordered medium for both the TM and TE cases. Further analysis reveals that the THz lasing threshold for TM fields is lower than that for TE fields