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苏翼雄	天津大学精密仪器与光电子工程学院17-210室	300072
王瑞康	广西壮族自治区南宁市青秀区星湖路南一里一巷16号	530022
徐可欣	天津市南开区卫津路92号 天津大学精密仪器与光电子工程学院	300072

摘要：光声成像技术可以提供深层组织的高分辨率和高对比度的组织断层图像，是进行脑成像的有力潜在工具之一。本文开展此项研究，搭建一套光声成像实验系统，在此基础上，获得10mm的混浊介质深度下的血管模拟样品图像，直径0.07mm的模拟血管能清晰地成像；活体研究中，成功进行活体白鼠脑部的血管分布的成像研究，重建图像中的各血管位置和形状与实际情况很好的吻合。

关键词：医学影像, 光声成像技术, 功能成像, 图像重建

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[Investigate on high-resolution photoacoustic tomography in brain image](#)

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Abstract: Photoacoustic tomography (PAT) is a powerful imaging technique for brain function image because it combines the merits and most compelling features of high resolution and good contrast. This letter describes a PAT experimental system constructed in our laboratory which consists of a Q-switched Nd:YAG pulse laser operating at 532 nm with a 8 ns pulse width to generate the photoacoustic signals from biological sample. Two-dimensional photoacoustic imaging of blood vessel phantom 1cm below the tissue-mimicking sample surface, where the blood vessel phantom with the diameter of 0.07mm can be located definitely. We also successfully demonstrate that the system is capable of imaging the blood vessels over the in vivo rat brain with skull and skin intact.

Key words: Medical imaging, Photoacoustic tomography, Function imaging, Reconstruction

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