Teraherrz Radiating Device (Yissum)

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Semiconductor device for generating T-rays

Categories	Homeland Security, Medical Imaging, Semiconductors
Development Stage	Full theoretical proof of concept
Patent Status	U.S. patent application Granted, Patents pending in Europe.
Market Size	The relevant markets are the radiation sources for homeland security and the healthcare equipment. The market size for THz applications is a direct result of the ability of this technology to compete with the usual X-Rays sources. There is tremendous potential for low cost, small, safe and integrated THz radiation sources.

Highlights

- Tera-Hertz radiation (T-rays) is non-ionizing and can penetrate a wide variety of non-transparent materials such as clothing, paper, cardboard, wood, masonry, plastic and ceramics, walls, clouds, etc...
- Implementation of applications have been hampered until now because of actual absence of practical coherent Tera-Hertz sources.

Our Innovation

- This novel coherent THz source based on semiconductor nanostructure promises 400 times higher gain and can be manufactured with existing MBE or CVD technologies.
- This device is based on coupled quantum wells of a particular design with a quantum-mechanical coupling between them.

Key Features

- Gain higher x400 than existing coherent Tera-Hertz sources
- Improved temperature characteristics

Development Milestones

- Experimental proof of concept of a Tera-Hertz laser with a gain x400 times higher than actual gain within 3-4 years-$400K .
- Test on existing applications.

The Opportunity

This innovation has the potential to provide a safe and low-cost T-rays source for applications in medical healthcare and homeland security.

It opens the way to important applications in medicine where it is important to avoid damaging to the biological samples.

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