

# Laser tech from a morning walk

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His invention has directly influenced the way we live today. With literally an infinite number of applications ranging from telecommunication to consumer electronics and medicine to military systems, billions of lasers are in work today.

Laser - acronym for light amplification by stimulated emission of radiation, has contributed to humanity as a powerful scientific tool for expanding knowledge and in its many applications that help people directly.

It has been more than four decades now, since his paper launched a new scientific field



**Dr Townes** Townes, is still actively engaged in frontier science and research.

Dr Townes, now 88, was in Bangalore to attend the "Science and Beyond" conference and in a chat with Deccan Herald shared his view on a host of issues including his path-breaking invention and current academic interests. Laser is a device that creates and amplifies a narrow,

intense beam of coherent light. However, it was a challenge to achieve this as atoms radiate their light in random directions at random times. It all began in the late 50s when Dr Townes, then a consultant at Bell Labs in the United States, along with his colleague Arthur Schawlow published their technical paper on the principles of the laser or producing coherent light.

That paper, published in Physical Review, caused an explosion of research by scientists at universities and industrial laboratories around the world.

Recalls Dr Townes, "I was working on a problem in molecular spectroscopy and had come to a dead end. There were certain

leads but the challenge was to build a small enough device that could generate the required micro wave radiation and it was beyond the fabrication techniques of the day". The breakthrough came during a morning walk in Franklin Park in Washington DC. He pulled an envelope out of his jacket and started to jot down a calculation on how many molecules he needed in a resonator to get the power output he wanted.

He shared the Nobel Prize in Physics in 1964 for his discovery. During the last four decades, Dr Townes' has worked in the areas of nuclear and molecular structure, quantum electronics and radio astronomy.

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Presently, he is working on study of stars in the infra red region using an application of his own invention - precision laser technology.

"I want to work in areas which have been neglected by others", he says. There are many puzzles that fascinate him - like the discrepancy between quantum mechanics and general relativity and nature of the physical constants.

"It is great to work with science, in fact, it is no work, it is fun", he says. Dr Townes will be delivering a public lecture at the J N Tata Auditorium of Indian Institute of Science on Friday at 6 pm. The talk is organised by National Institute of Advanced Studies and John Templeton Foundation.