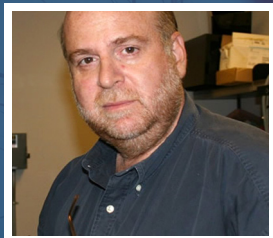


# Targeting Cancer At Its Core



## Sadik Esener

Professor, NanoEngineering Professor, Electrical and Computer Engineering Director, Cancer Nanotechnology Center

## CURRENT RESEARCH

### Tumor-targeting and exploring the human body with nanotechnology

Dr. Sadik Esener, Nano-Engineering professor at University of California, San Diego, is researching ways to target cancer at its core. Using nanotechnology, he is shrinking electronic, photonic, and mechanical devices to a dimension where they can interact with biology. Dr. Esener has developed nanomachines that can encapsulate and carry various cargos including enzymes that interact with the tumor environment and their nutrients, reside in the body for long periods of time, and when activated by ultrasound, can produce significantly higher propulsion force and move much faster than what was previously possible, to penetrate desired tissues and cells and deliver their payloads. His technologies provide the power to deliver therapeutics specifically where they are needed the most while minimizing side effects.

Dr. Esener's work does not stop at cancer research. He is simultaneously working on improving brain mapping and imaging to be able to attack Alzheimer's and Parkinson's diseases. His sophisticated nanocapsules containing various enzymes allow for a better imaging and understanding of neurotransmitter distribution and behavior involved in Alzheimer's and Parkinson's diseases.

- Dr. Esener feels, "Using enzymes protected inside porous nanoparticles we are able to starve cancerous cells and halt their division, while at the same time targeting therapeutics to the tumor. Our technology should be applicable to a large variety of cancers."
- There is a wide range of applications for this technology. For example, ultrasound activated nanobullets can be used to navigate drugs into diseased tissue, shoot genes into cell nuclei for gene therapy, scrape deposits...

## AFFILIATION

 University of California, San Diego

## EDUCATION

- Ph.D. in Applied Physics and Electrical Engineering 1987 , University of California, San Diego
- M.S. in Electrical Engineering 1981 , University of Michigan
- B.S. in Electronics and Communication Engineering 1979 , Istanbul Technical University

## AWARDS

- Collegiate Inventors Competition with Graduate Student Inanc Ortac, 2012

## RESEARCH AREAS

Life Science, Oncology / Cancer, Oncology / Cancer

## FUNDING REQUEST

Your contributions will allow Dr. Esener to continue making more medical advances in the lab and investigate the use of Nanotechnology to fight cancer and cure other diseases.

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