

Abstract Submitted
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A Study on Functionalized Cancer Scanning Contrast Agents in Positron Emission Tomography (PET) JUNG HWAN HEO, ANDREW KYUNG, Choice Research Group — In medical imaging, contrast agents play an important role in refining the clarity and contrast of a body part. Higher clarity and contrast allow the physician to clearly differentiate between the body structure and nearby tissue. This enables accurate examination and diagnosis of any abnormality in the body part. Contrast agents are used for medical scans such as the Positron Emission Tomography (PET) scan, a frequently used diagnostic method in modern clinical practice that does not use damaging ionizing radiation. Through electrochemical techniques, researchers have studied the possibility of using aqueous nanoparticles as contrast agents. This paper uses theoretical and computational simulations to examine nanomaterials such as fluorescent functionalized particles and to evaluate the potential of nano-scaled contrast agents to detect tumor cells. The potential of using nano-scaled contrast agents is determined by molecular stability and safety. This paper compares and analyzes the thermodynamic stabilities of various contrast agents, such as derivatives of lanthanide element and metal oxides. The thermodynamic stability is determined by the molecules optimized energy, which can be computed through chemical programs and the Density Functional Theory(DFT).

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