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Novel ZnO/Hydrogel Detection System for Bio-Imgaing[1] BENNY URBAN, University of North Texas, FUJITA LAB, SHIMANE UNIVERSITY COLLABORATION — ZnO is a direct bad gap semiconductor with high excitation energy. Because of its direct band gap, excitation energy, and non-toxic properties, it is a promising candidate for biological applications. Hydrogel is a gel composed of randomly cross linked polymer networks. Because of the gels ability to shrink as temperature increases, ZnO nanoparticles that are incorporated into the hydrogel matrix will increase luminescence due to higher exciton binding energy. ZnO that is incorporated into the hydrogel matrix can be bioconjugated to a antibody which seeks out a specific type of cell. Through a process known as fluorescence resonance energy transfer (FRET) it is possible to view the cell by exciting the ZnO/hydrogel. If the system is tailored to seek out cancer cells it is possible to create an efficient cancer detection system. Conjugating small amounts of medicines to the ZnO/hydrogel may also be possible, which would disperse to the cell when the ZnO was excited.

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