Carbon based nanosciences

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In this talk, I will first present a brief review of our research on carbon nanomaterials over the years, including carbon nanotube synthesis, electronic devices and biological applications. I will then present our work in the renewable energy areas including the development of novel batteries using novel carbon materials such as rechargeable aluminum/graphite batteries, and Li/Cl2 and Na/Cl2 batteries. Then I will focus on our work in the NIR-II/SWIR biomedical imaging field, utilizing novel fluorescent nanomaterials and molecules emitting in the 1000-3000 nm range. I will show in vivo preclinical imaging of disease models and recent effort on clinical translation of NIR-II imaging.