Two topics on InGaN-based photoelectrochemical sensors

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In the first part I will discuss InN/InGaN quantum dots and InGaN nanowires grown by plasma-assisted molecular beam epitaxy on Si (111) substrates. Applications are photoelectrochemical (PEC) potentiometric biosensors and photofuel cell biosensors. The analytes or fuels are glucose and H_2O_2. The second part will be devoted to n-InGaN/p-Cu_2O core-shell nanowire p-n heterojunctions grown by a combination of molecular beam epitaxy of the InGaN nanowire core and electrodeposition of the p-Cu_2O shell. Strategically this solves the problem of p-type doping of In-rich InGaN. Applications are visible-light PEC photodetectors for high In content and visible-blind UV PEC photodetectors for low In content using the closed cycle NaI redox electrolyte. Sensitivity, responsivity, detectivity and response times are analyzed in detail.