**SUPPLEMENTAL FILE**

**Electrochemical and spectrophotometric detection of malachite green in aqueous system using imprinted sol-gel polymer-capped quantum dots**

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**Fig. S1.** RTP spectra of *MG-imp-QDs* in buffer solution at pH 11 upon variation of excitation wavelengths. **Inset:** Emission intensity at 594 nm depending on excitation wavelength.

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**Fig. S2.** Absorption spectra of 1x10-5 M *MG* depending on pH of the solution. **Inset:** Change in absorbance of MG upon pH values.

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**Fig. S3.** RTP spectra of *N-imp-QDs* (A) and *MG-imp-QDs* (B) in acetate buffer, pH 5 upon addition of different concentration of MG. (C) Change in the RTP emission intensity at 594nm depending on MG concentration.

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**Fig. S4.** RTP spectra of *N-imp-QDs* (A) and *MG-imp-QDs* (B) in acetate buffer solution containing 0.1 M NaCl at pH 5.0 upon addition of MG. (C) Change in the RTP intensity at 594nm of *N-imp-QDs* and *MG-imp-QDs* depending on MG concentration.

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**Fig. S5.** RTP spectra of *N-imp-QDs* (A) and *MG-imp-QDs* (B) in phosphate buffer, pH 7.4 upon addition of different concentration of MG. (C) Change in the RTP intensity at 594 nm of *N-imp-QDs* and *MG-imp-QDs* as a function of MG concentration.

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**Fig. S6.** RTP spectra of *N-imp-QDs* (A) and *MG-imp-QDs* (B) upon addition of various concentration of MG in phosphate buffer at pH of 11. (C) Change in ratio of RTP intensity of both QDs at 594 nm depending on MG concentration.

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**Fig. S7.** RTP spectra of *MG-imp-QDs* upon titration with various analogue molecules: Crystal Violet (A), Fuchsine (B), Diamond Fuchsine (C), Ethidium Bromide (D).

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**Fig. S8.** (A)RTP spectra of *MG*-*imp-QDs* in phosphate buffer at pH of 11 containing 0.1 M NaCl upon addition of different *MG* concentrations. (B) Change in RTP emission intensity ratio for various *MG* concentration.

**Table S1.** Effects of various ions and bioactive molecules on the RTP intensity of *MG*-*imp-QDs* in the presence of 50 µM MG

|  |  |  |
| --- | --- | --- |
| Co-existance substance | [Co-existance substance] / [MG] | Change in the RTP  intensity (%) |
|  | 1000 | +1.35 |
|  | 500 | -2.13 |
|  | 1000 | +0.68 |
|  | 500 | -1.12 |
|  | 1000 | -1.51 |
|  | 1000 | -0.69 |
| Dop | 500 | -1.71 |
| Teo | 1000 | -2.19 |
| Trp | 400 | -2.56 |