

# Poster Presentation

## Inter-Disciplinary Explorations in Chemistry (I-DEC 2018)

### Green hetero-atom doped carbon quantum dots as multifunctional material for sensing, bioimaging and molecular electronics

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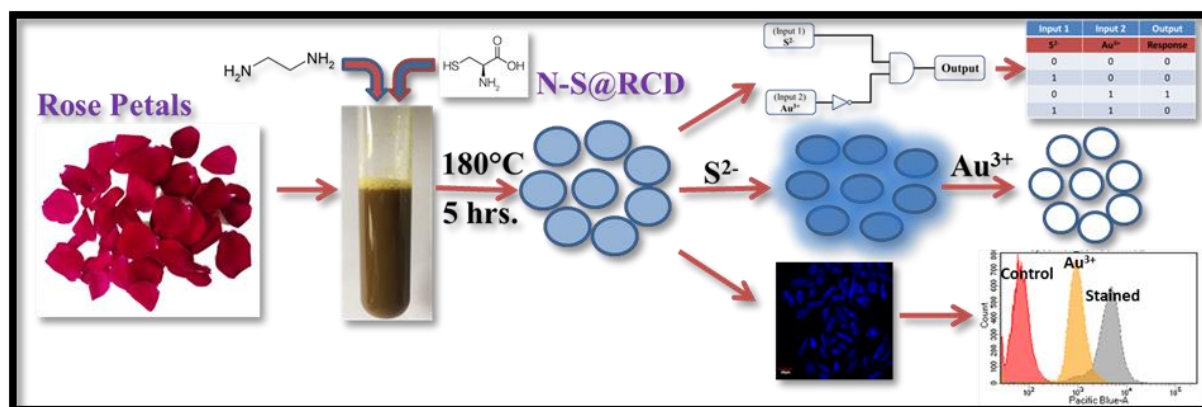
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#### Abstract:

The carbon quantum dots are relatively new member of carbon family and hence their multifunctionality is still in its infancy. In view of this, we have reported a green approach for development of nitrogen and sulfur co-doped rose carbon dots (**N-S@RCD**) using petal extract of *Rosa indica*. The **N-S@RCD** was explored for multifunctional applications viz. dual fluorescence turn “off-on-off” sensing of sulfide and gold ion with high selectivity, live cancer cell imaging, hemo and biocompatibility. The presence of sulfide ion shows a linear “Turn-on” in the range of 0-500 $\mu$ M with limit of detection (LOD) as low as 92.4 nM. The sensing of Au<sup>3+</sup> ion is via a “Turn-off” mode and is linear in range 50-750  $\mu$ M with LOD of 63.1nM. The two mutually independent events, coexists and results in a Turn “off-on-off” switching. Moreover, the molecular electronics viewpoint was explored by employing **N-S@RCD** as single and multi-input logic gate mimic for construction of “YES” and “INHIBIT” gates. The promising behaviour of these c-dots may open new direction for multifunctional applications of green c-dots in optical, biological and electronics applications.



#### References and Notes:

- (1) Sharma, V.; Kaur, N.; Tiwari, P.; Saini, A. K.; Mobin, S. M. Multifunctional Fluorescent “Off-On-Off” Nanosensor for Au<sup>3+</sup> and S<sup>2-</sup> Employing N-S Co-Doped Carbon-Dots. *Carbon* **2018**, *139*, 393–403.