October 25, 2017

Dear Editor

**No:** 5655

**Title:** Fabrication of reduced graphene oxide decorated with CuS nanoparticles and its activity toward the adsorption of methylene blue.

Response to the reviewer’s comments

Thank you very much for reviewing our manuscript again. The manuscript was revised and corrected according to the reviewer’s comment. Revised parts were highlighted in yellow color in the manuscript.

The followings are the reviewer’s comments and the corresponding responses.

**1. In the Introduction part authors have mentioned that RGO-CuS can be used as photocatalysts. It is known that, generally, good adsorption properties of photocatalysts can increase its photocatalytic activity due to photocatalytic degradation of more accessible, adsorbed compound. In my opinion, authors have to explain, in more details, why they examined adsorption characteristics of fabricated nanocomposite, and to clearly demonstrate the innovative point of this paper.**

**Response:**

-There are many reports about the photocatalytic property of CuS along with RGO. To our knowledge, nobody make any details about the adsorption of MB on RGO-CuS. Adsorption can be possible before photocatalysis, even during the photocatalysis. So our approach was to understand the adsorption process, i.e., how the nanocomposite can use to remove dyes in aqueous media. We successfully observed RGO-CuS is a strong adsorbent, almost >80% dye has been removed by adsorption. This part is revised and added in the Introduction in the manuscript.

**2. The authors have compared adsorption characteristics of RGO-CuS to the ones of CuS. For the purpose of comparison, the adsorption characteristics of RGO have to be examined also.**

**Response:**

CuS is a good adsorbent. In this work our focus is to enhance this character of CuS by adding RGO. So we just compare bare CuS with RGO-CuS and we did not consider the character of RGO compared to RGO-CuS.

**3. In the Abstract part, line 17: Further, the kinetics of adsorption of methylene blue is discussed carefully. For examination of adsorption data, authors have used only linear form of pseudo-second-order rate equation. Therefore, kinetic data are discussed, but not carefully.**

**Response:**

-The text has been changed in the manuscript.

**4. Page 14, line 237: The pH was as it was (6.1). Was the experiment performed without estimation of solution pH, or the pH was estimated to 6.1?. From Fig 8 it can be concluded that adsorption is the highest on pH 8. Why the experiment was not done under pH 8?**

**Response:**

The adsorption ability of RGO-CuS was initially tested without modification of the environment e.g. temperature, pH. When we get positive result i.e., this composites showed desired result, then we proceed to change the parameters which can affect the process. Figure 8 was made to show how the adsorption varied with the change of pH.

**5. The adsorption was performed at various temperatures in order to understand the type of adsorption. The type of adsorption should be estimated and discussed after calculation of thermodynamic parameters (the values of enthalpy ∆HӨ, entropy ∆SӨ and Gibbs free energy ∆GӨ).**

**Response:**

-Gibbs free energy, enthalpy and entropy change have been calculated and included in the manuscript.