which are in contact with aqueous systems. The non-corrosive chemical cleaning agent may be a lower alkyl amine, e.g., dimethylamine, lower hydroxyalkyl amine, e.g., ethanolamine and pentanolamine, or cyclic dimines, e.g., 1,10-phenanthroline, 2,9-dimethyl-1,10-phenanthroline, 2,2'-bipyrindine and 4,4'-bypyridine, or combinations thereof.

SUMMARY

[0004] In one aspect, the present invention refers to an anti-fouling composition comprising: (a) a metallic component selected from the group of alkali metal salt, alkaline metal salt, transitional metal salt, salt of tin, and combinations thereof; and (b) a non-metallic component selected from the group of urea, oxalic acid, succinic acid, tartaric acid, EDTA, ammonium oxalate, ammonium nitrate, ammonium acetate, ammonium sulfate, sugar, and combinations thereof. In another aspect, the present invention refers to a method for preparation of a composition for mitigation of foulants in reactors, the method comprising the steps of (a) contacting at least one non-metallic component and a metallic component with water to form a mixture; (b) removing water from the mixture to obtain a composition. The present disclosure describes an anti-fouling composition including: (a) a metallic component comprising of at least one metal salt; and (b) a non-metallic component. The present disclosure describes a method for preparation of an anti-fouling composition for mitigation of foulants in reactors, the method including the steps of: (a) contacting at least one non-metallic component and a metallic component with water to form a mixture; and (b) removing water from the mixture to obtain a composition. The present disclosure also describes a process of reducing fouling in reactors or furnaces using the anti-fouling composition.

[0005] These and other features, aspects and advantages of the present subject matter will be better understood with reference to the following description and appended claims. This summary is provided to introduce a selection of concepts in a simplified form. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter.

BRIEF DESCRIPTION OF DRAWINGS

[0006] The detailed description is described with reference to the accompanying figures. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears. The same numbers are used throughout the drawings to reference like features and components.

[0007] Figure 1 illustrates TGA of HITEC salt (7% $NaNO_3$, 53% KNO_3, 40% $NaNO_{2)}$, HITEC-UREA (10% Urea with 90% HITEC salt), and HITEC-EDTA (15% EDTA with 85% HITEC salt).

[0008] Figure 2 illustrates TGA of SM1 (50% KNO_3, 20 % $BaNO_3$, 15% $CaNO_3$, 10 % $MgNO_3$, 5 % $NaNO_3$), SM1-NH_4OH (prepared using 500 mg SM1 and NH4OH to get pH around 11), and SM4-EDTA (80% SM4 and 20 % EDTA; SM4: 58% KNO_3, 11% $CaNO_3$, 31 % $NaNO_3$).