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Research Details :

Research Title	: <u>Formation, characterization and stabilization of water-soluble colloidal MnO₂ in the oxidation of methionine, thiourea and thioacetamide by permanganate</u> <u>Formation, characterization and stabilization of water-soluble colloidal MnO₂ in the oxidation of methionine, thiourea and thioacetamide by permanganate</u>
Description	: Stabilization and characterization of water soluble colloidal MnO ₂ during the oxidation of sulfur-containing organic reductants "thiourea, thioacetamide and methionine" by permanganate in aqueous neutral media are reported for the first time. Upon addition of permanganate to a solution of methionine, a transient species appears within the time of mixing which is stable for several weeks. On the other hand, the transient species is unstable in the presence of thiourea and thioacetamide, respectively. The nature of manganese (IV) species present in solution was characterized by spectrophotometric and coagulation measurements. On addition of HClO ₄ , there is a decrease in the absorbance of the reaction mixture. Under pseudo - first - order conditions ([reductants] > [MnO ₄ ⁻]), the reduction rate was very fast up to the formation of water soluble colloidal MnO ₂ . The effect of various parameters, such as hydrogen ion concentration, amount of MnO ₄ ⁻ , concentration of reductants was investigated. Mechanisms consistent with the observed results have been proposed and discussed.
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Supervisor	: Shael Ahmed AL-Thabaiti, F.M. Al-Nowaiser, A.Y. Obaid, A.O. Al-Youbi and Zaheer Khan
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Researchers :

Researcher Name (Arabic)	Researcher Name (English)	Researcher Type	Degree	Email
أ.د. شعيل بن أحمد الثبائتي	Dr. Shael Ahmed AL-Thabaiti	Researcher	أستاذ	sthabiti@hotmail.com
د. فوزية محمد النويصر	F.M. Al-Nowaiser	Researcher	أستاذ مساعد	falnowaiser@kau.edu.sa