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Kinetics and thermodynamic study of mechanistic oxidation of some nitrogenous compounds by selenium dioxide

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Abstract: Kinetic study of mechanistic oxidation of p-ethylaniline and benzylamine by selenium dioxide reaction in aqueous acetic acid medium is first-order each in [substrate] and [oxidant]. Presence of mineral acid catalyses the reaction rate. Primary salt effect is negligible. Increase in percentage of acetic acid in the reaction medium increases the reaction rate. A suitable mechanism has been suggested with the kinetic result have been proposed.

(Key words : Resolutions involvement. consistent. composition, deterioration)

Introduction

Selenium dioxide is a mild oxidant[1] Kinetic of oxidation of ethyl acetoacetate by hexacyanoferrate (III)[2] and Ce (IV)[3] have already been reported. In this note we report the kinetics of oxidation of some nitrogenous compound by selenium dioxide in aqueous acetic acid. Selenium dioxide (SeO_2) oxidation shows that it has been used as an oxidising agent to oxidiseketones,[4,5] aldehydes,[6] esters,[7,8] acids,[9] olifines,[10-12] alcohols,[13,14] kinetically as well as in chemical synthesis of 3α–hydroxy-5α-cholet-8(14), 16-diene-15-one. The oxidative nature of aromatic hydroxy acid has also been examined by selenium dioxide.[15]

Experimental
Material and Methods

Kinetic investigation of some nitrogenous compounds by selenium dioxide, acetic acid water medium in resonance of sulphuric acid, different chemicals were used in th : form as solutions. Some nitrogenous compou d (Koch Light) and selenium dioxide (Loba) we e used as such. Acetic acid (GRS Merck) was purif ed before use. The reaction was followed by estim ating the unreacted selenium dioxide iodomet ically at regular time intervals.

Results and Discussion

The pseudo first-order rate constants were calculated from integrated f rst-order equation. The rate constants were re] roducible within 1-2%. The order of title reacti n in both selenium dioxide and some nit ogenous compounds is one each.The rate of o idation of some nitrogenous compounds i *largely* enhanced in the presence of added H_2SO_4 and $HClO_4$. It has been experimentally ob erved that some nitrogenous compounds is not l ydrolysed either by H_2SO_4 or $HClO_4$ under the conditions employed. The added sodium aceta e slightly retards the rate of oxidation. The primar salt effect studied by added K_2SO_4 is negli ible. The increase in the percentage of acetic ac d increase the reaction rate. The various ctivation parameters were computed from the rate study measurements carried out at fou different temperatures (the results are given in Table 2). A plot of log k vs. 1 ID is linear show ng thereby that Arrhenius equation is followed. The reaction is characterized by a low energy o activation giving a large negative value of entropy of activation.

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PP 30:

Biosynthesis in Air Temperature

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'he chemists gets nearly all his precipitates from solutions and commonly too as a result of some combination into a new substance. The precipitation of the meteorologist on the country s not a new substance it all but the same old substance in a different state. That is liquid water su h as join as solid water as snow for instance, condensed from gaseous water. Some of the chen ists precipitate softly quickly. While other fall slowly and few take forever-and-a-day to come down. So it is also with the meteorologists precipitations. Large hailstones full with a speed ar l that is dagesous doizzle drops just doubled along and dew doesn't fall at all it is just said to fi ll.

'here is a tendency on the part of many meteorologists to confine the term precipitation to only 1at water, liquid or solid which after dropping out of the clouds actually reaches the earth in ts broader uses however it includes as explained all natural condensates from gaseous water to liquid or solid waste it is have used in more comprehensive sense. One of the most interesti g and in some respects an exceedingly important from of precipitation in fog a great swarm-l ke assemblage in the instance air of hundreds of thousands of droplets per cubic inch so minute 1 1at it would take more of them to make a teaspoonful of water it is a surface clouds whose n y said droplets have formed on condensation nuclei such as tater microscopic particles of sea sa t, incident to the cooling of the air below its down point.

PP 31:

Chemical and analytical procedure of power plant

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:nvironment Management, Occupational Health and Safety Systems: NTPC has actively gone for adoption of best international practices on environment, occupational health and safe y areas. The organization has pursued the Environmental Management System (EMS) ISO 140 01 and the Occupational Health and Safety Assessment System OHSAS 18001 at its differen establishments. As a result of pursing these practices, all NTPC power stations have been cer ified for ISO 14001 & OHSAS 18001 by reputed national and international Certifying Agencies. Pollution Control Systems While deciding the appropriate technology for its projects, NTPC i tegrates many environmental provisions into the plant design.

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