ELEMENTARY ORGANIC ANALYSIS: THE DETERMINATION OF CARBON AND HYDROGEN

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649401338

Elementary Organic Analysis: The Determination of Carbon and Hydrogen by Francis Gano Benedict

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd. Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

FRANCIS GANO BENEDICT

ELEMENTARY ORGANIC ANALYSIS: THE DETERMINATION OF CARBON AND HYDROGEN

Trieste

Elementary Organic Analysis.

(¥)

98) 1980 .

2. 10

32

Elementary Organic Analysis

The Determination of Carbon and Hydrogen

BY

FRANCIS GANO BENEDICT, PH.D.,

Instructor in Chemistry in Wesleyan University

EASTON, PA.: THE CHEMICAL PUBLISHING CO. 1900.

(4)(2+1)

ł

COPYRIGHT, 1900, BY ROWARD HART,

53

*

8. 15

¥2

10 A

. .

 (\mathbf{t})

4

-

1

104

PREFACE

2

Perhaps no analytical operation is at once so fundamentally important and exasperatingly vexatious as the organic combustion. Notwithstanding this fact, save for the meager statements in one or two of the larger books on organic chemistry, no description of the process of the determination of carbon and hydrogen is accessible to most students. As a rule a knowledge of the operation is chiefly obtained by word of mouth.

This little manual is presented in the hope that the descriptions of processes here recorded will aid in making this method of analysis more familiar and more satisfactory.

Usually very little, if any, discrimination is exercised in burning the compounds obtained in organic research, and experiment alone is relied upon to secure the proper conditions for complete combustion. It is hoped that the different cases cited in the latter part of the manual will aid in giving some clue to the treatment necessary for many compounds, thereby saving time and, more frequently, valuable material.

While an attempt has been made to describe all operations commonly used it is obviously impossible not to give fuller consideration to such modifications of the general method as have been suggested by an experience with over two thousand combustions. Ac-

. . . 7.

PREFACE

cordingly these modifications are treated in detail and as a general rule recommended in preference to the older manipulations.

For the painstaking care and numerous suggestions of Mr. Emil Osterberg, assistant in this laboratory, whose experimental skill has contributed greatly to many of the modifications here presented, the writer is extremely grateful.

MIDDLETOWN, CONN.

vi

TABLE OF CONTENTS

r .

ſ

Ì

κ,

1-1-1-

١,

.

<u>(</u>2

			-				•		+		÷		÷	I	
oxy	gen			•	8		38	÷		-				2	
xyge	n		-	-		æ	H				×.		\mathbf{x}_{i}	3	
gas-	hol	der	s	-			0.5					÷		6	
	12		5 9				•		-				\mathbf{z}_{i}	II	
aratu	5			-	0.5		-							12	
g and	st	opp	ers	• •			· .							17	t.
irnac	es						÷.	2				2		18	
abes							4		82		÷			21	
nts		£.,		-	1		2	2				2		24	
	tio	n tı	abe	20 0		÷.	83		2		¥.		2	1000	
1.0			3	1				÷		14		2			
nts	÷		Ξ	-		÷	÷						-	31	
parati	IS	÷.		0				\mathbf{x}		14					
10.01 A.A.A.A.		g al	bso	rbit	1g i	app	arat	us			÷.		-		
			1	5:	-			-		-		-		1000	
he co	mb	ust	ion	tul	e		-								
s of	the	con	nbı	usti	011					2		4		2220	
						ice	s -		2		3		÷		
	-							ret	IS	1		្		1. C. K. K.	
							1	2006 			à.		4	68	
								i n	aet	als		ų,		70	
L DOUI				1.000	·		Ladi								
		tly	cor	nbu	isti	ble	: Dog	es	-		-			70	
diffi	cul	1.111									-	÷	•	70 73	
l diffi liqu	cul ids	an	đ v	olat	ile					×.		×	•	73	
diffi	cul ids losi	an	đ v	olat	ile						-		•	2.0	
f diffi liqu f expl	cul ids losi	an	đ v	olat	ile				87 18 18	1	*		•	73 80	
	xyge: gas- aratu y and urnace ubes nts mbus ents mbus ents ents terial he co ss of f nitr f bod f bod	xygen gas-hol aratus g and sta irnaces abes - nts mbustion ents - oaratus weighing terial us; he comb s of the f nitroget bodies t bodies	gas-holder aratus - g and stopp irnaces - abes - nts - mbustion tr ents - oaratus - weighing al terial used he combust ss of the con f nitrogenou i bodies con t bodies con	xygen gas-holders aratus g and stoppers irnaces abes nts mbustion tube ents oaratus weighing abso terial used he combustion s of the combu f nitrogenous s bodies contai bodies contai	xygen gas-holders aratus gand stoppers irnaces abes nts mbustion tube ents weighing absorbin terial used he combustion tul so of the combusti f nitrogenous sube bodies containin bodies containin	xygen gas-holders aratus g and stoppers irmaces abes nts mbustion tube ents weighing absorbing terial used he combustion tube so of the combustion f nitrogenous substan bodies containing t	xygen gas-holders aratus g and stoppers irmaces abes nts mbustion tube ents weighing absorbing app terial used he combustion tube so of the combustion f nitrogenous substance bodies containing the bodies containing sulf	xygen gas-holders aratus g and stoppers irnaces abes nts mbustion tube ents weighing absorbing apparate terial used terial used the combustion tube s of the combustion i nitrogenous substances bodies containing the halop bodies containing sulphur	xygen gas-holders aratus g and stoppers irmaces abes nts mbustion tube ents baratus weighing absorbing apparatus terial used he combustion tube s of the combustion i nitrogenous substances bodies containing the haloger bodies containing sulphur	xygen gas-holders aratus g and stoppers irmaces abes nts mbustion tube ents weighing absorbing apparatus terial used terial used f he combustion tube so of the combustion f nitrogenous substances bodies containing the halogens bodies containing sulphur	xygen gas-holders aratus g and stoppers irmaces abes nts mbustion tube ents weighing absorbing apparatus terial used terial used f he combustion tube so of the combustion f nitrogenous substances bodies containing the halogens bodies containing sulphur	xygen gas-holders aratus g and stoppers irmaces abes nts mbustion tube ents weighing absorbing apparatus weighing absorbing apparatus terial used the combustion tube so of the combustion f nitrogenous substances bodies containing the halogens	xygen gas-holders aratus g and stoppers irmaces abes hts mbustion tube ints mbustion tube ints introgenous substances ints introgenous substances intodes intodes introgenous substances intodes introgenous substances intodes introgenous substances introdes introgenous substances introdes in	xygen gas-holders aratus g and stoppers irmaces abes nts mbustion tube ents weighing absorbing apparatus terial used the combustion tube s of the combustion i nitrogenous substances bodies containing the halogens bodies containing sulphur	xygen3gas-holders6aratus12g and stoppers17irmaces18abes21nts22mbustion tube27ents31aratus33weighing absorbing apparatus42terial used45he combustion tube45so of the combustion49f nitrogenous substances58i bodies containing the halogens65

٠

.

1 1