

ORGANIC CHEMISTRY 1 LECTURE GUIDE 2019

BY RHETT C. SMITH

Marketed by Proton Guru

Find additional online resources and guides at [protonguru.com](http://protonguru.com)

Try out *Organic Chemistry 1 Primer*  
and  
*Organic Chemistry 1 Reaction and Practice Problem Book*

For concise, plain-language, study-on-your own organic help and practice

There is a lot of online video content to accompany this book at the Proton Guru YouTube Channel! Just go to YouTube and search "Proton Guru Channel" to easily find our content.

**Instructors:** Free PowerPoint lecture slides to accompany this text can be obtained by emailing [IQ@protonguru.com](mailto:IQ@protonguru.com) from your accredited institution email account. The homepage at [protonguru.com](http://protonguru.com) provides a link to citations to popular text books for further reading on each Lesson topic in this primer.

© 2006-2018

Executive Editor: Rhett C. Smith, Ph.D. You can reach him through our office at: [IQ@protonguru.com](mailto:IQ@protonguru.com)

All rights reserved. No part of this book may be reproduced or distributed, in any form or by any means, without permission in writing from the Executive Editor. This includes but is not limited to storage or broadcast for online or distance learning courses.

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

ISBN 978-1074137434

# Organic Chemistry 1 Lecture Guide 2019

By Rhett C. Smith, Ph.D.

© 2006, 2011-2019

Companion Books from the Proton Guru:

*Organic Chemistry 1 Reactions and Practice Problems 2019*

by Rhett C. Smith

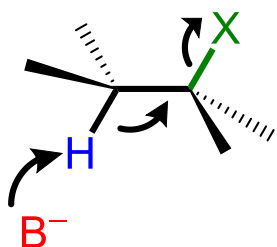
*Organic Chemistry 1 Primer 2019,*

by Rhett C. Smith, Andrew G. Tennyson, and Tania Houjeiry

## Lecture Topic II.7: The E2 (Bimolecular Elimination) Mechanism

E2 is a Concerted Reaction to Produce an Alkene

We learned the general form of the E2 reaction in **Lecture Topic I.8**. We will now study this mechanistic step in more detail.



(A)

(B) Like the  $S_N2$  reaction, the E2 reaction occurs in a single step. This type of reaction is called a:

(C) That there is only one step means that base, substrate and leaving group all influence rate. The rate law is:

**A stronger base and better leaving group lead to faster rate.**

Notes

A

A strong base is necessary for a rapid E2 reaction of an alkyl halide. H-bonding solvents (polar protic solvents) weaken base strength. Therefore:

H-bonding solvents weaken  
Bases

B

C

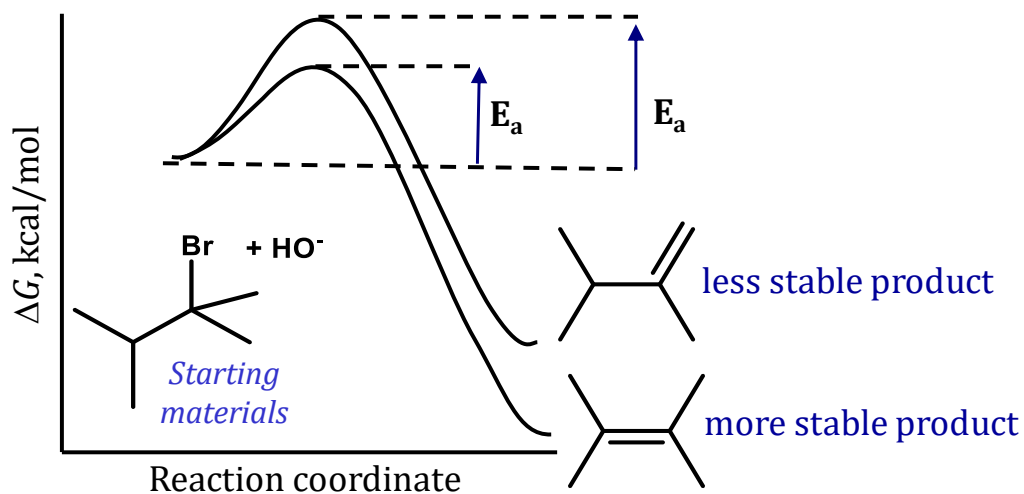
It is also observed that more substituted alkyl halides react faster:

How can we use our knowledge of reactions to explain this observation?

Notes

More substituted alkyl halides yield more substituted alkenes

(A)



The E2 reactions generally follow "Zaitsev's Rule" like E1 reactions do.

Notes