

Table 2: FT-IR Spectral Data

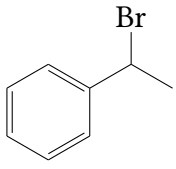
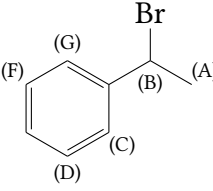
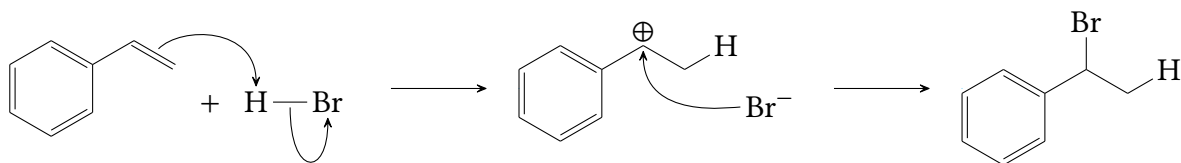
Structure	Wavenumber (cm <sup>-1</sup> )		Intensity	Functional Group
	Literature	Experimental		
	3034	3036	Weak	C <sub>sp</sub> <sup>2</sup> -H
	2992	2986	Weak	C <sub>sp</sub> <sup>3</sup> -H
	966	966	Medium	C-X
	910	761	Strong	1-sub. benzene
	695	694	Strong	1-sub. benzene

Table 3: <sup>1</sup>H NMR Spectral Data

Structure	Assignment	$\delta$ (ppm)	Integration	Multiplicity
	A	1.95	3	d
	B	5.17	1	q
	C	7.32	5	m
	D	7.32	5	m
	E	7.32	5	m
	F	7.32	5	m
	G	7.32	5	m

### 3 Chemistry

The reaction performed in this experiment, treating an alkene with H-X, is known as a hydrohalogenation reaction, and follows this specific mechanism:



The regiochemistry of this reaction must be considered as there are two vinylic positions that could have borne the hydrogen. Hence, these are the two possible products of this reaction:

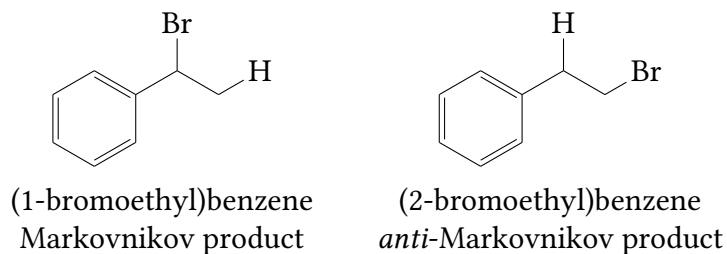


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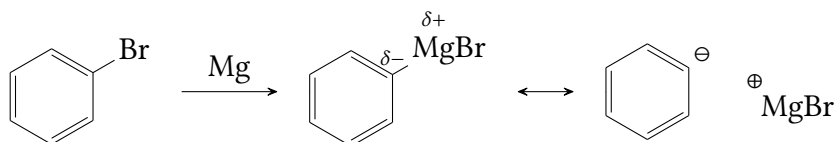
Structure	Wavenumber (cm <sup>-1</sup> )		Intensity	Functional Group
	Literature	Experimental		
	3366	3401	Strong	-OH str.
	3063	3063	Medium	C <sub>sp</sub> <sup>2</sup> -H str.
	2965	2972	Strong	C <sub>sp</sub> <sup>3</sup> -H str.
	746	738	Strong	monosub. benzene
	700	701	Strong	monosub. benzene

Table 3: <sup>1</sup>H NMR Spectral Data

Structure	Assignment	$\delta$ (ppm)	Integration	Multiplicity
	A	7.30	5	s
	B	4.55	1	t
	C	2.24	1	bs
	D	1.68	2	q
	E	1.06	1	m

### 3 Chemistry

In order to perform this reaction, a Grignard reagent first needed to be made. This is typically performed by reacting an alkyl halide with Mg, as shown below. C is far more electronegative than Mg, withdrawing electron density from Mg to give it a  $\delta^-$  charge. The difference is so large that it can be depicted as an ionic bond<sup>3</sup>.



This allows the Grignard reagent to react as a carbon nucleophile, attacking the electrophilic carbonyl group as shown below.

