

The Absorption of Ultraviolet Light by Enterogastrone

A preliminary report

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It has been found that an enterogastrone preparation from intestines of hogs, which contains no amino acids or peptides (biuret and ninhydrin reactions negative) and has a nitrogen content of 0.24 %, shows a

characteristic absorption curve in the ultraviolet region. It has a maximum at 2 600 Å and a minimum at 2 350 Å. Evidence has been obtained, that this absorption curve is due to the active enterogastrone molecule. It was found that the decrease in biological activity which occurred when the extract was dissolved in water and stored at room temperature (probable due to bacterial activity) was accompanied by a decrease in the extinction at 2 600 Å. A detailed description of the experiments and a full discussion of the results will shortly appear in this journal.

Received August 15, 1950.

Compound	H—X dist. r_1	Dissociat. energy	G dyne/cm	Δ	r_2	Ionic radii ⁴	
						Pauling	Goldschmidt
HF	0.92 Å	6.1 e.v.	$9.7 \cdot 10^5$	0.45 Å	1.37 Å	1.36 Å	1.33 Å
HCl	1.28 »	4.43 »	$5.15 \cdot 10^5$	0.52 »	1.80 »	1.81 »	1.81 »
HBr	1.41 »	3.60 »	$4.11 \cdot 10^5$	0.53 »	1.94 »	1.95 »	1.96 »
HJ	1.60 »	2.75 »	$3.14 \cdot 10^5$	0.53 »	2.13 »	2.16 »	2.20 »
HH	0.74 »	4.48 »	$5.9 \cdot 10^5$	0.50 »	1.24 »	2.08 »	1.27 »

We may perhaps understand this by considering the distance r_2 as the boundary for interference between electrons belonging to the halogen and those belonging to another electronic system. As the proton approaches r_2 from r_1 the electron cloud is polarized and finally — at r_2 — it is just about being deprived of one electron. But if an electron belonging to a “stable” cation tries to get inside the limiting sphere of the halide ion the resulting electronic interaction will give an antibonding effect so that usually the ionic crystal will be more stable than the molecular state. (As the proton has no electrons there will be no antibonding effect when it enters the position inside the limiting sphere giving minimum of electrostatic energy.) This point of view is in essential agreement with

our ideas about ionic crystals according to which the interionic distances are determined by the condition that the energy shall be a minimum and the electron clouds of the ions must not inter-penetrate. But as it is only a very rough picture to reckon with a definite limit r_2 for electronic interaction in the hydrogen halides it may, perhaps, be concluded that the ionic radii to the same extent represent idealized concepts.

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Received September 26, 1950.