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Abstract

The project describes the influence of five different percentages of ethanol in a range between (10-50)% in a mixture of ethanol-water on the acidity of thirteen imines as derived from N-formyl-pipyridine. These five percentages of ethanol-water mixtures have a clear influence on the values of ionization constants pK_a of imines. The plot between pK_a versus the dielectric constant (D) of the medium for imines studied, shows a direct or an inverse linear plots. These variations in plots were interpreted in terms of solvation reaction for the ionization reactions of imines in the media stated previously.

pK_a - pK_a % (-)
(D)



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α - benzilmonoxime

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pK_a ()

%(-)

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pK_a

BDH Fluka

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IR , UV

-:

HCl NaOH

, M .

10^{-2} M .

.%

-:

() pK_a

pH

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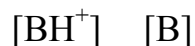
(Handerson-Hassellbach)



$$pK_a = pH + \log \frac{[HA]}{[A^-]} \dots (1)$$



$$pK_a' = pH + \log \frac{[BH^+]}{[B]} \dots (2)$$



.(PBE)

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Electrothermal melting point apparatus

FTIR

Tensor 27

Bruker

Spectrophotometer

(UV-1601)

(Shimadzu)

(%)

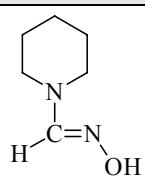
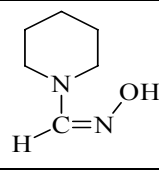
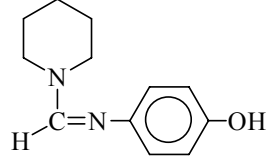
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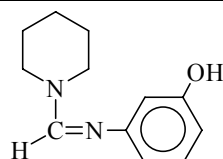
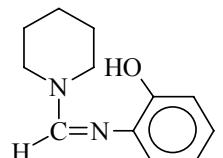
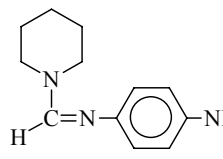
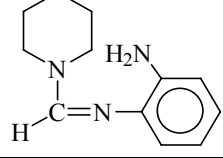
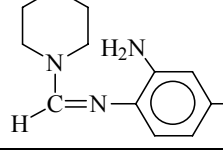
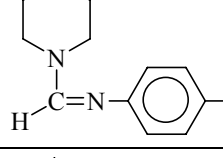
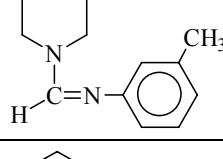
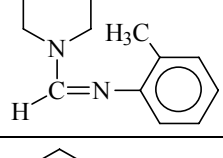
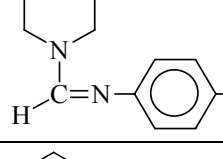
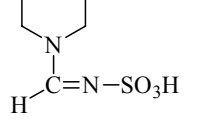
(× ×)

(Matched)

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Comp. No.	Nomenclature	Structure
1	syn-N-formyl pipyridine aldoxime	
2	anti-N-formyl pipyridine aldoxime	
3	Pipyridine-N-formylnylidine-p-aminophenol	

Comp. No.	Nomenclature	Structure
4	Pipyridine-N-formylnylidine-m-aminophenol	
5	Pipyridine-N-formylnylidine-o-aminophenol	
6	Pipyridine-N-formylnylidine-p-phenylenediamine	
7	Pipyridine-N-formylnylidine-o-phenylenediamine	
8	Pipyridine-N-formylnylidine-4-nitro-o-phenylenediamine	
9	Pipyridine-N-formylnylidine-p-toludine	
10	Pipyridine-N-formylnylidine-m-toludine	
11	Pipyridine-N-formylnylidine-o-toludine	
12	Pipyridine-N-formylnylidine-p-anisidine	
13	Pipyridine-N-formylnylidine sulphamic acid	

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IR UV

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pKa

o

.pKa`

%(-)

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a,b

D

$$D = ae^{-bT}$$

T

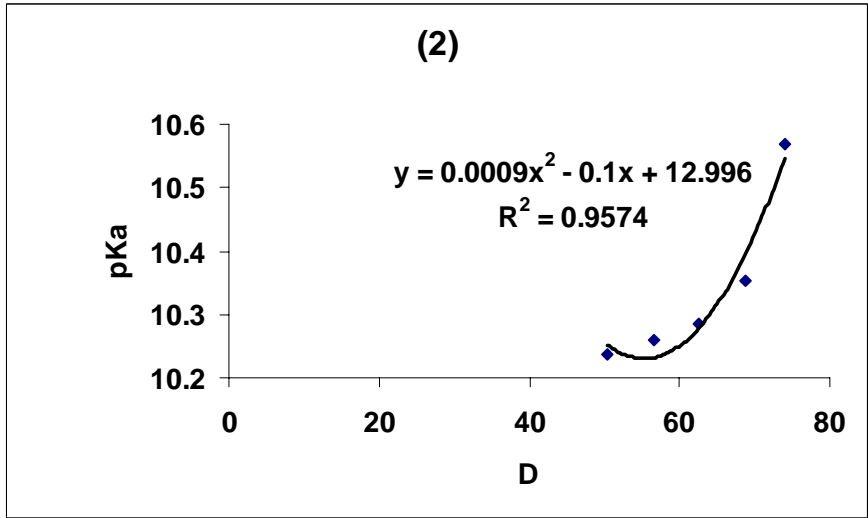
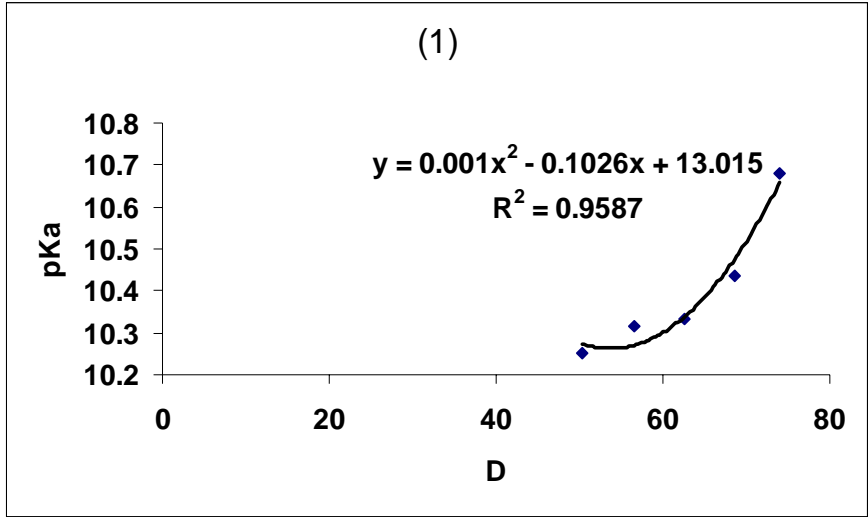
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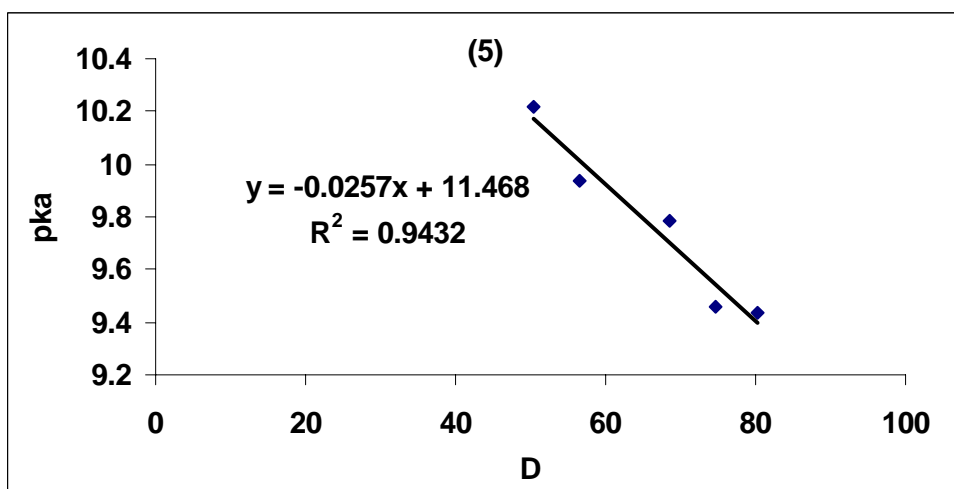
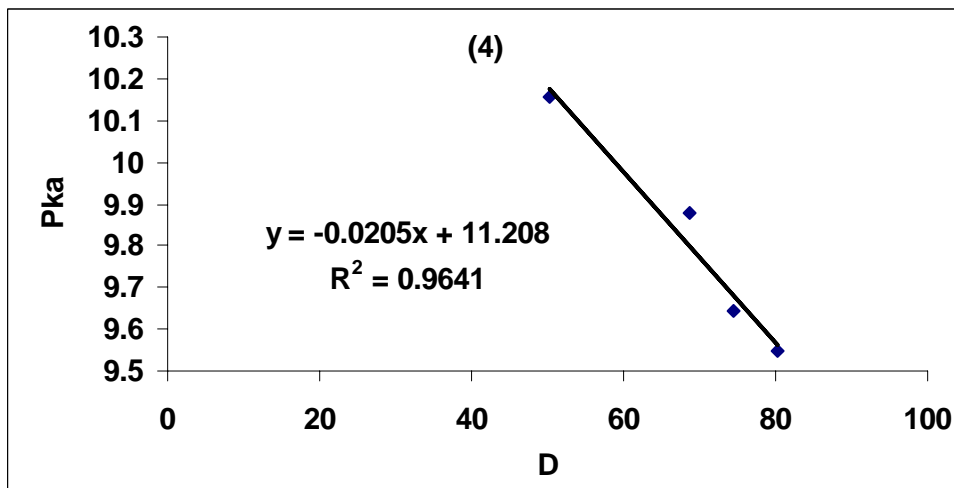
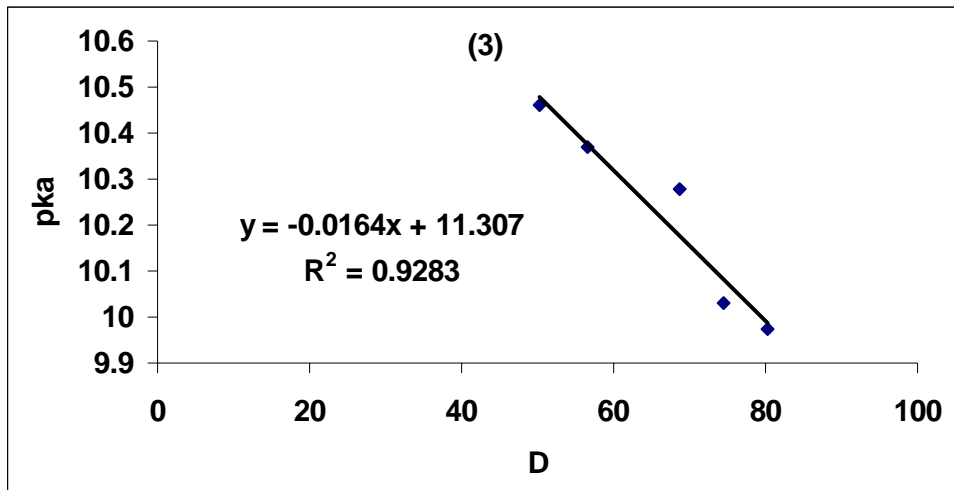
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pKa` pKa

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(D) pKa : ()
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- - : ()



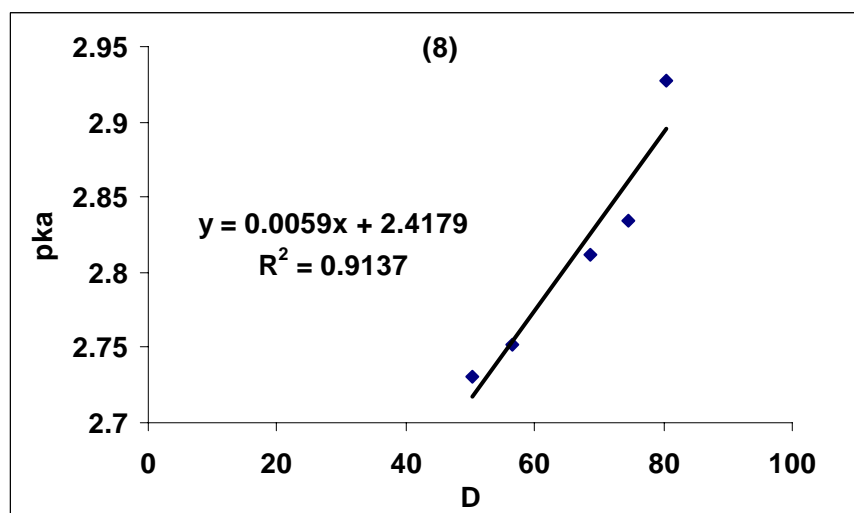
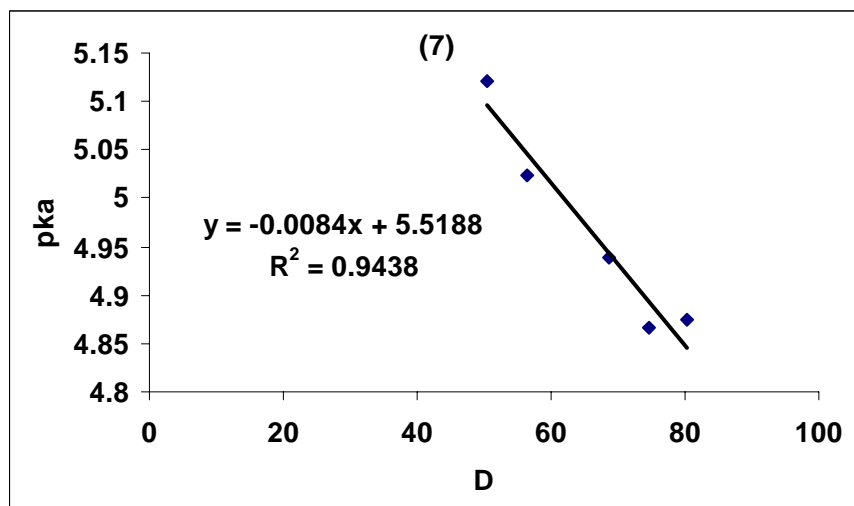
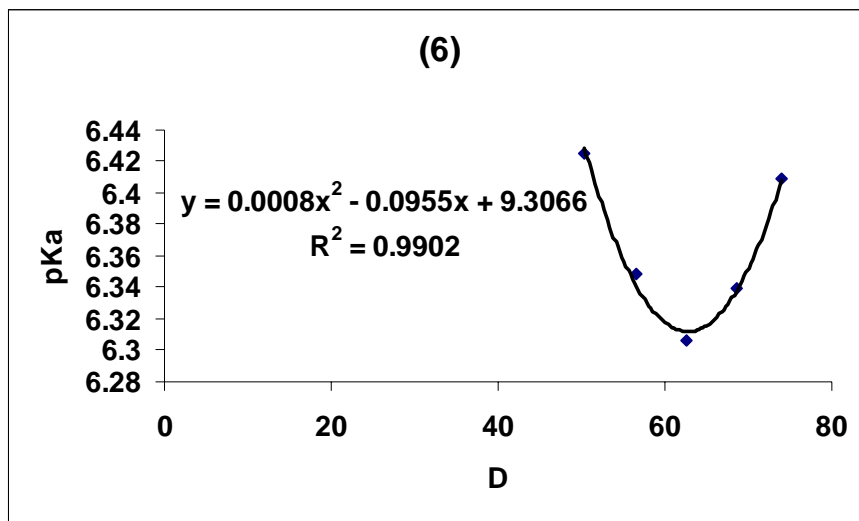
(D)

pKa

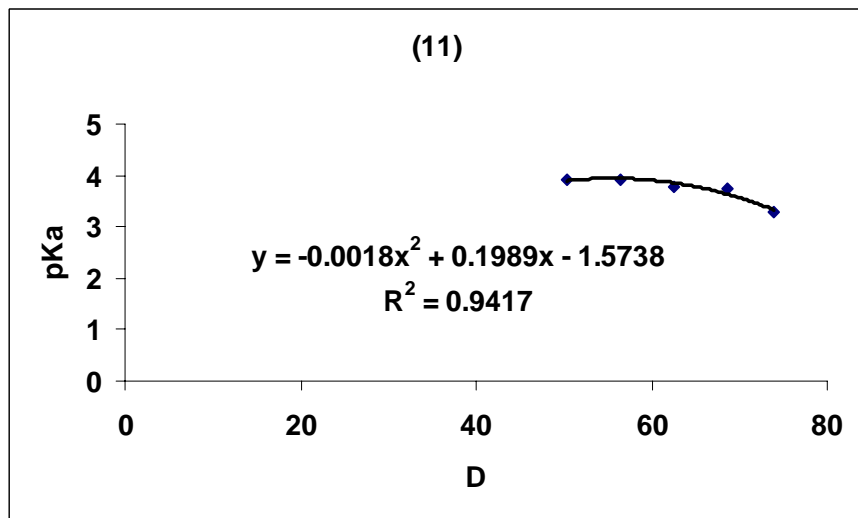
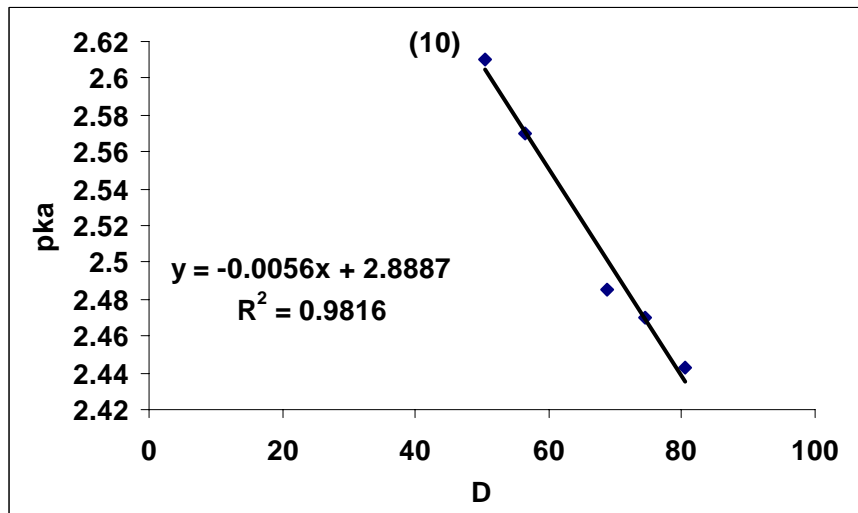
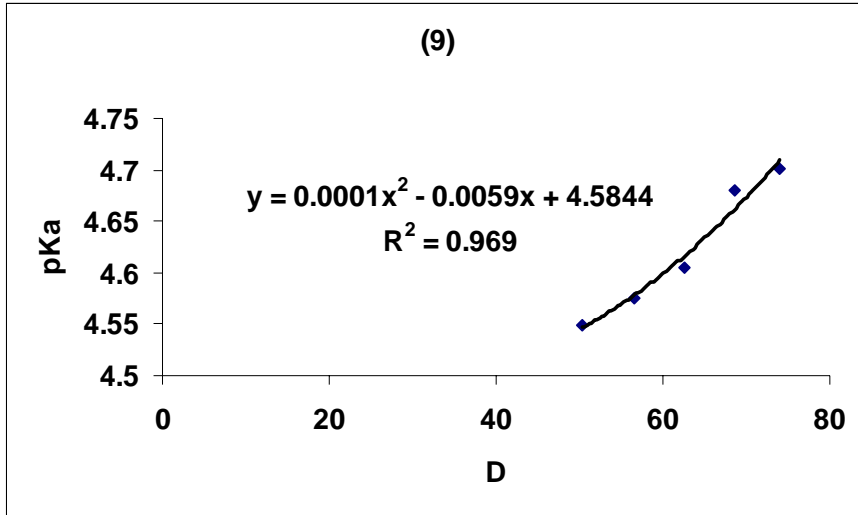
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-p- - - : ()
-m- - - : ()
-o- - - : ()

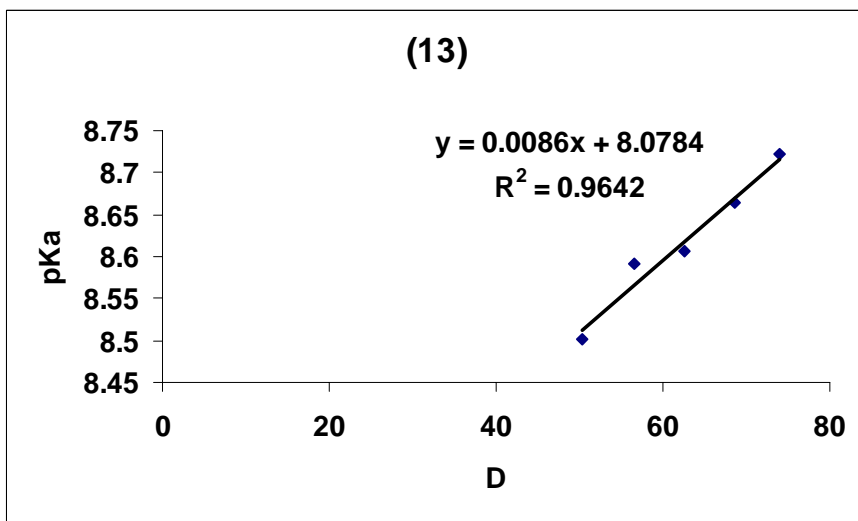
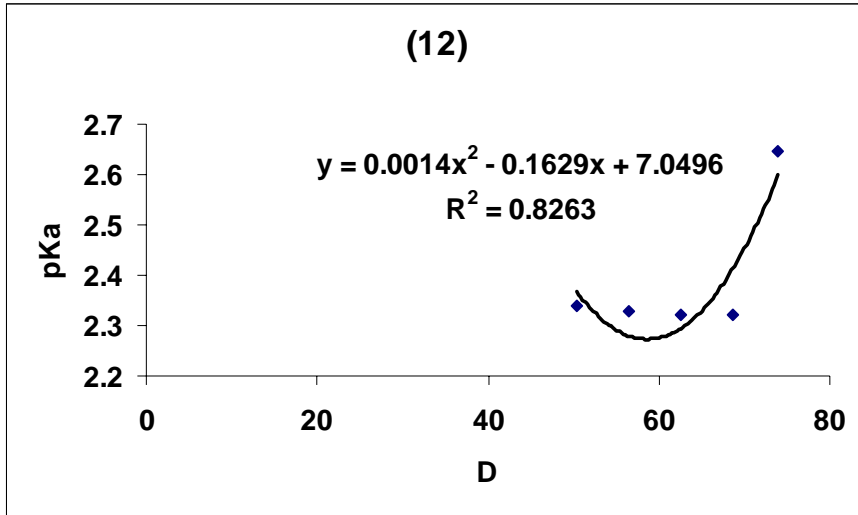


(D) pKa : ()
 -p- - - : ()
 -o- - - : ()
 -o- -p- - - : ()



...

(D)	pKa	:()
-p-	--	:()
-m-	--	:()
-o-	--	:()



(D)	pKa	:()
-p-	--	:()
	--	:()

pKa` (-)

-:

pKa

()

pKa

$$F = \frac{q_1 q_2}{D r^2} \dots\dots\dots ()$$

:

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:F

:q₁

:q₂

:D

:r²

pKa

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pKa' ()

(D)

pKa

()

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(-)

(D)

(Solvation)

(

) (D)

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(-) ()

$\overline{\text{pKa}}$ % (-)

.(-)

$\overline{\text{pKa}}$ ' (-)

(D)

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(D) $\overline{\text{pKa}}$ ` $\overline{\text{pKa}}$

(- -)

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(-)

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Ethanol %	ml of (0.1 M) NaOH	pKa	$\overline{\text{pKa}}$
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Ethanol %	ml of (0.1 M) NaOH	pKa	pKa
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