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Aurora Scientific Technical Bulletin

Title: Compounds Detectable with digitalPID and miniPID Fast-Response Photo-Ionization Detectors

Tech Bulletin #: 200B-T02

Applies To: 100A, 200B, 201A

Objective:

To provide users with a list of compounds detectable with our Photo-Ionization Detectors

Table:

Compound	Ionization Potential (eV)
Acetaldehyde	10.21
Acetic Acid	10.37
Acetone	9.69
Acetylene*	11.41
Acrolein	10.1
Acrylonitrile	10.91
Allene	9.83
Allyl Alcohol	9.67
Allyl Chloride	10.2
Aminoethanol	9.87
2-Amino Pyridine	8.34
Ammonia	10.15
Aniline	7.7
Arsine	9.89
Benzaldehyde	9.53
Benzene	9.25
Benzenethiol	8.33
Bromobenzene	8.98
1-Bromobutane	10.13
2-Bromobutane	9.98
1-Bromobutanone	9.54
1-Bromo-2-Chloroethane	10.63
Bromoethane	10.28
Bromoethene	9.8
Bromoform	10.48
1-Bromo-3-Hexanone	9.26
Bromomethane	10.53
Bromomethyl Ethyl Ether	10.08

Compound	Ionization Potential (eV)
1-Bromo-2-Methylpropane	10.09
2-Bromo-2-Methylpropane	9.89
1-Bromopentane	10.1
1-Bromopropane	10.18
2-Bromopropane	10.08
1-Bromopropene	9.3
2-Bromopropene	10.06
3-Bromopropene	9.7
2-Bromothiophene	8.63
o-Bromotoluene	8.79
m-Bromotoluene	8.81
p-Bromotoluene	8.67
1,3-Butadiene	9.07
2,3-Butadione	9.23
n-Butanal	9.83
s-Butanal	9.73
n-Butane	10.63
n-Butanol	10.04
s-Butanol	10.23
t-Butanol	10.25
2-Butanone	9.53
1-Butene	9.58
cis-2-Butene	9.13
trans-2-Butene	9.13
n-Butyl Acetate	10.01
s-Butyl Acetate	9.91
t-Butyl Acetate	9.9
n-Butyl Alcohol	10.04

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Compound	Ionization Potential (eV)
n-Butylamine	8.71
s-Butylamine	8.7
t-butylamine	8.64
n-Butylbenzene	8.69
t-Butylbenzene	8.68
Butyl Cellusolve	8.68
n-Butyl Mercaptan	9.15
t-Butyl Mercaptan	9.03
p-tert-Butyltoluene	8.35
1-Butyne	10.18
2-Butyne	9.85
n-Butyraldehyde	9.83
Carbon Disulfide	10.13
Carbon Tetrachloride *	11.28
Chloroacetaldehyde	10.16
Chlorobenzene	9.07
1-Chloro-2-Bromoethane	10.63
1-Chlorobutane	10.67
2-Chlorobutane	10.65
1-Chlorobutanone	9.54
1-Chloro-2,3-Epoxypropane	10.6
Chloroethene	10
2-Chloroethoxyethene	10.61
1-Chloro-2-Fluorobenzene	9.16
1-Chloro-3-Fluorobenzene	9.21
cis-1-Chloro-2-Fluoroethene	9.87
trans-1-Chloro-2-Fluoroethene	9.87
Chloroform *	11.37
o-Chloroiodobenzene	8.35
Chloromethylethyl Ether	10.08
Chloromethylmethyl Ether	10.25
1-Chloro-2-Methylpropane	10.66

Compound	Ionization Potential (eV)
1-Chloropropane *	10.82
2-Chloropropane *	10.78
3-Chloropropene	10.04
2-Chlorothiophene	8.68
o-Chlorotoluene	8.83
m-Chlorotoluene	8.83
p-chlorotoluene	8.7
o-Cresol	8.48
m-cresol	8.48
p-Cresol	8.48
Crotonaldehyde	9.73
Cumene (Isopropylbenzene)	8.75
Cyanoethene *	10.91
Cyanogen Bromide *	10.91
3-Cyanopropene	10.39
Cyclobutane	10.5
Cyclohexane	9.98
Cyclohexanol	10
Cyclohexanone	9.14
Cyclohexene	8.95
Cyclo-Octatetraene	7.99
Cyclopentadiene	8.55
Cyclopentane	10.52
Cyclopentanone	9.26
Cyclopentene	9.01
Cyclopropane	10.06
2-Decanone	9.4
Dibromochloromethane	10.59
1,1-Dibromoethane	10.19
Dibromomethane	10.49
1,2-Dibromopropane	10.26
Dibutylamine	7.69
1,2-Dichlorobenzene	9.07

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Compound	Ionization Potential (eV)
1,1-Dichloroethane *	11.06
1,2-Dichloroethane *	11.04
1,1-Dichloroethene	10
cis-1,2-Dichloroethene	9.65
trans-1,2-Dichloroethene	9.66
Dichloromethane *	11.35
1,2-Dichloropropane *	10.87
1,3-Dichloropropane *	10.85
1,1-Dichloropropanone	9.71
2,3-Dichloropropene	9.82
Dicyclopentadiene	7.74
Diethoxymethane	9.7
Diethylamine	8.01
Diethylamino Ethanol	8.58
Diethyl Ether	9.53
Diethyl Ketone	9.32
Diethyl Sulfide	8.43
1,2-Difluorobenzene	9.31
1,4-Difluorobenzene	9.15
Difluoromethylbenzene	9.45
Diiodomethane	9.34
Diisobutyl Ketone	9.04
Diisopropylamine	7.73
1,1-Dimethoxyethane	9.65
Dimethoxymethane	10
Dymethylamine	8.24
Dimethylaniline	7.13
2,3-Dimethylbutadiene	8.72
2,2-Dimethylbutane	10.06
2,3-Dimethylbutane	10.02
2,2-Dimethylbutan-3-one	9.18
3,3-Dimethylbutanone	9.17
2,3-Dimethyl-2-Butene	8.3

Compound	Ionization Potential (eV)
Dimethyl Disulfide (DMDS)	8.46
Dimethyl Ether	10
3,5-Dimethyl-4-Heptanone	9.04
1,1-Dimethylhydrazine	8.88
2,2-Dimethyl-3-Pentanone	8.98
2,2-Dimethylpropane	10.35
Dimethyl Sulfide (DMS)	8.69
Di-n-Propylamine	7.84
Di-n-Propyl Disulfide	8.27
Di-n-Propyl Ether	9.27
Di-i-Propyl Ether	9.2
Di-n-Propyl Sulfide	8.3
Epichlorohydrin	10.6
Ethane *	11.65
Ethanethiol (Ethyl Mercaptan)	9.29
Ethanol	10.62
Ethanolamine	9.87
Ethene (Ethylene)	10.52
Ethyl Acetate	10.11
Ethylamine	8.86
Ethyl Amyl Ketone	9.1
Ethylbenzene	8.76
Ethyl Bromide	10.29
Ethyl Butyl Ketone	9.02
Ethyl Chloroacetate	10.2
Ethyl Disulfide	8.27
Ethyl Ethanoate	10.1
Ethyl Ether	9.41
Ethylene Chlorohydrin	10.9
Ethylene Dibromide (EDB)	10.37
Ethylene Oxide	10.56
Ethyl Formate	10.61

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Compound	Ionization Potential (eV)
Ethyl Iodide	9.33
Ethyl Isothiocyanate	9.14
Ethyl Methanoate	10.61
Ethyl Methyl Sulfide	8.55
Ethyl Propanoate	10
Ethyl Trichloroacetate	10.44
mono-Fluorobenzene	9.2
mono-Fluoroethene	10.37
mono-Floromethanal	11.4
Fluorotribromomethane	10.67
o-Fluorotoluene	8.92
m-Fluorotoluene	8.92
p-Fluorotoluene	8.79
Furan	8.89
Furfural	9.21
n-Heptane	10.07
2-Heptanone	9.33
4-Heptanone	9.12
n-Hexane	10.18
2-Hexanone	9.44
1-Hexene	9.46
Hydrogen Selenide	9.88
Hydrogen Sulfide	10.46
Hydrogen Telluride	9.14
Iodobenzene	8.73
1-Iodobutane	9.21
2-Iodobutane	9.09
Iodoethane (Ethyl Iodide)	9.33
Iodomethane (Methyl Iodide)	9.54
1-Iodo-2-Methylpropane	9.23
1-Iodopentane	9.19
1-Iodopropane	9.26

Compound	Ionization Potential (eV)
2-Iodopropane	9.17
o-Iodotoluene	8.62
m-Iodotoluene	8.61
p-Iodotoluene	8.5
Isoamyl Acetate	9.9
Isoamyl Alcohol	10.16
Isobutane	10.57
Isobutanol	10.47
Isobutyl Acetate	9.97
Isobutyl Alcohol	10.47
Isobutylamine	8.7
Isobutylbenzene	8.68
Isobutylene	9.43
Isobutyl Ethanoate	9.95
Isobutyl Formate	10.46
Isobutyl Mercaptan	9.12
Isobutyl Methanoate	10.46
Isobutyraldehyde	9.74
Isopentane	10.32
Isoprene	8.85
Isopropyl Acetate	9.99
Isopropyl Alcohol	10.16
Isopropylamine	8.72
Isopropylbenzene	8.75
Isopropyl Ether	9.2
Isovaleraldehyde	9.71
Ketene	9.61
Mesitylene	8.4
Mesityl Oxide	9.08
Methyl Acetate	10.27
Methylamine	8.97
Methyl Bromide	10.53
2-Methyl-1,3-Butadiene	8.85

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Compound	Ionization Potential (eV)
2-Methylbutanal	9.71
2-Methylbutane	10.31
2-Methyl-1-Butene	9.12
3-Methyl-1-Butene	9.51
3-Methyl-2-Butene	8.67
Methyl n-Butyl Ketone	9.34
Methyl Butyrate	10.07
Methyl Chloroacetate	10.35
Methylchloroform *	11.25
Methylcyclohexane	9.85
Methylcyclohexanol	9.8
Methylcyclohexanone	9.05
4-Methylcyclohexene	8.91
Methylcyclopropane	9.52
Methyl Dichloroacetate	10.44
Methyl Ethanoate	10.27
Methyl Ethyl Ketone	9.53
Methyl Ethyl Sulfide	8.55
2-Methyl Furan	8.39
Methyl Iodide	9.54
Methyl Isobutyl Ketone	9.3
Methyl Isobutyrate	9.98
Methyl Isopropyl Ketone	9.32
Methyl Mercaptan	9.44
Methyl Methacrylate	9.74
2-Methylpentane	10.12
3-Methylpentane	10.08
2-Methylpropanal	9.74
2-Methylpropane	10.56
2-Methyl-2-Propanol	9.7
2-Methylpropene	9.23
Methyl n-Propyl Ketone	9.39
Methyl Styrene	8.35

Compound	Ionization Potential (eV)
Napthalene	8.1
Nitric Oxide	9.25
Nitrobenzene	9.92
p-Nitrochlorobenzene	9.96
5-Nonanone	9.1
3-Octanone	9.19
4-Octanone	9.1
1-Octene	9.52
cis-1,3-Pentadiene	8.59
trans-1,3-Pentadiene	8.56
n-Pentanal	9.82
n-Pentane	10.53
2,4-Pentanedione	8.87
2-Pentanone	9.39
3-Pentanone	9.32
1-Pentene	9.5
Perfuoro-1-Heptene	10.48
n-Perfuoropropyl Iodide	10.36
n-Perfuoropropyl-Iodomethane	9.96
n-Perfuoropropyl-Methyl Ketone	10.58
Phenol	8.69
Phenyl Ether	8.09
Phenyl Isocyanate	8.77
Phosphine	9.96
Pinene	8.07
Propadiene	10.19
n-Propanal	9.95
Propane *	11.07
1-Propanethiol (n-Propyl Mercaptan)	9.2
n-Propanol	10.51
Propanone	9.69

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Compound	Ionization Potential (eV)
Propene	9.73
Prop-1-ene-2-ol	8.2
Prop-2-ene-1-ol	9.67
Propionaldehyde	9.98
n-Propyl Acetate	10.04
n-Propyl Alcohol	10.51
n-Propylamine	8.78
n-Propylbenzene	8.72
Propylene	9.73
Propylene Imine	8.76
Propylene Oxide	10.22
n-Propyl Ether	9.27
n-Propyl Formate	10.54
Propyne	10.36
Pyridine	9.32
Styrene	8.47
Tetrachloroethylene (PCE)	9.32
Tetrafluoroethene	10.12
Tetrahydrofuran	9.54
Thioethanol	9.29
Thiomethanol	9.44
Thiophene	8.86
1-Thiopropanol	9.2
Toluene	8.82
o-Toluidine	7.44
Tribromoethene	9.27
1,1,1-Trichlorobutanone	9.54
1,1,1-Trichloroethane *	11.25

Compound	Ionization Potential (eV)
Trichloroethylene (TCE)	9.45
Trichloromethyl Ethyl Ether	10.08
Triethylamine	7.5
1,2,4-Trifluorobenzene	9.37
1,3,5-Trifluorobenzene	9.32
Trifluoroethene	10.14
1,1,1-Trifluoro-2-Iodoethane	10.1
Trifluoroiodomethane	10.4
Trifluoromethylbenzene	9.68
Trifluoromethylcyclohexane	10.46
1,1,1-Trifluoropropene	10.9
Trimethylamine	7.82
2,2,4-Trimethyl Pentane	9.86
2,2,4-Trimethyl-3-Pentanone	8.82
n-Valeraldehyde	9.82
Vinyl Acetate	9.19
Vinyl Bromide	9.8
Vinyl Chloride	10
4-Vinylcyclohexene	8.93
Vinyl Ethanoate	9.19
Vinyl Fluoride	10.37
Vinyl Methyl Ether	8.93
o-Vinyl Toluene	8.2
o-Xylene	8.56
m-Xylene	8.56
p-Xylene	8.45
2,4-Xylidine	7.65