

TABLE OF CONTENTS

1	Acknowledgement	iii
2	Introduction	v
3	List of papers	xv
4	The papers	1
5	Index to co-authors of the papers	665
6	Subject index to the papers	666
7	List of papers published by the students and collaborators of Sir C. V. Raman on the scattering of light	669
8	Author index to the papers published by the students and collaborators of Sir C. V. Raman on the scattering of light	697

LIST OF PAPERS

1	The Doppler effect in the molecular scattering of radiation. 1919. Nature, <u>103</u> , 165.	1
2	On the transmission colours of <u>sulphur</u> suspensions. 1921. Proc. R. Soc. London. 'A' <u>100</u> , 102-109. (With E. B. Ray)	2
3	A method of improving visibility of distant objects. 1921. Nature. <u>108</u> , 242.	10
4	The colour of the sea. 1921. Nature. <u>108</u> , 367	11
5	The molecular scattering of light in liquids and solids. 1921. Nature. <u>108</u> , 402.	14
6	On the molecular scattering of light in water and the colour of the sea. 1922. Proc. R. Soc. London 'A'. <u>101</u> , 64-80.	15
7	Optical observation of the thermal agitation of the atoms in crystals. 1922. Nature. <u>109</u> , 42.	32
8	Anisotropy of molecules. 1922. Nature. <u>109</u> , 75-76.	34
9	Molecular structure of amorphous solids. 1922. Nature. <u>109</u> , 138-139.	36
10	The Molecular diffraction of light. Calcutta, The Calcutta University Press. 1922. 103 pages.	39
11	Diffraction by molecular clusters and the quantum structure of light. 1922. Nature. <u>109</u> , 444-445.	149
12	Molecular anisotropy in liquids. 1922. Nature. <u>110</u> , 11.	152
13	Opalescence phenomena in liquid mixtures. 1922. Nature. <u>110</u> , 77-78	155
14	Transparency of liquids and the colour of the sea. 1922. Nature. <u>110</u> , 280.	158
15	Thermal opalescence in crystals and the colour of ice in glaciers. 1923. Nature. <u>111</u> , 13-14.	160

C.V. RAMAN — PAPERS ON THE SCATTERING OF LIGHT

- | | | |
|----|--|-----|
| 16 | On the molecular scattering of light in dense vapours and gases. 1923. Phil. Mag. <u>45</u> , 113-138. (With K. R. Ramanathan) | 163 |
| 17 | On the molecular scattering and extinction of light in liquids and the determination of the Avogadro constant. 1923. Phil. Mag. <u>45</u> , 625-640. (With K. Seshagiri Rao) | 179 |
| 18 | On the molecular scattering of light in liquid mixtures. 1923. Phil. Mag. <u>45</u> , 213-224. (With K. R. Ramanathan) | 195 |
| 19 | On the polarization of the light scattered by gases and vapours. 1923. Phil. Mag. <u>46</u> , 426-434. (With K. Seshagiri Rao) | 207 |
| 20 | Molecular scattering of light in carbon dioxide at high pressures. 1923. Proc. R. Soc. London 'A' <u>104</u> , 357-368. (With K. R. Ramanathan) | 216 |
| 21 | The scattering of light by anisotropic molecules. 1923. Nature. <u>112</u> , 165-166. | 228 |
| 22 | The structure of molecules in relation to their optical anisotropy. 1924. Nature. <u>114</u> , 49-50. | 230 |
| 23 | The scattering of light by liquid and solid surfaces. 1923. Nature. <u>112</u> , 281-282. | 232 |
| 24 | Relation of Tyndall effect to osmotic pressure in colloidal solutions. 1927. Indian J. Phys. <u>2</u> , 1-6. | 235 |
| 25 | Scattering of X-rays in liquids. 1923. Nature. <u>111</u> , 488. | 241 |
| 26 | Nature of liquid state. 1923. Nature. <u>111</u> , 428. | 243 |
| 27 | Diffraction of X-rays in liquids, liquid mixtures, fluid crystals and amorphous solids. 1923. Proc. Indian Assoc. Cult. Sci. <u>8</u> , 127-162. (With K. R. Ramanathan) | 245 |
| 28 | On the mean distance between neighbouring molecules in a fluid. 1924. Phil. Mag. <u>47</u> , 671-679. | 281 |

LIST OF PAPERS

- | | | |
|----|--|-----|
| 29 | The scattering of light by liquid boundaries and its relation to surface tension, Part 1.
1925. Proc. R. Soc. London 'A'. <u>108</u> , 561-571. (With L. A. Ramdas) | 290 |
| 30 | The scattering of light by liquid boundaries and its relation to surface tension, Part 2.
1925. Proc. R. Soc. London 'A'. <u>109</u> , 150-157. (With L. A. Ramdas). | 303 |
| 31 | The scattering of light by liquid boundaries and its relation to surface tension, Part 3.
1925. Proc. R. Soc. London 'A'. <u>109</u> , 272-279. (With L. A. Ramdas) | 310 |
| 32 | Die Zerstreuung des Lichtes durch dielektrische Kugeln. 1925. Z. Phys. 33, 870. | 319 |
| 33 | On the thickness of the optical transition layer in liquid surfaces. 1927. Phil. Mag. 3, 220-223. (With L. A. Ramdas). | 320 |
| 34 | The birefringence of crystalline carbonates, nitrates and sulphates. 1926. Nature. <u>118</u> , 264-265. | 324 |
| 35 | Electrical polarity of molecules. 1926. Nature. <u>118</u> , 302. (With K. S. Krishnan) | 325 |
| 36 | Magnetic double refraction in liquids, Part I: Benzene and its derivatives. 1927. Proc. R. Soc. London 'A'. <u>113</u> , 511-519. (With K. S. Krishnan). | 326 |
| 37 | Electrical double refraction in relation to polarity and optical anisotropy of molecules, Part I: Gases and vapours. 1927. Phil. Mag. <u>3</u> , 713-723. (With K. S. Krishnan). | 335 |
| 38 | Electrical double refraction in relation to polarity and optical anisotropy of molecules, Part II: Liquids. 1927. Phil. Mag. <u>3</u> , 724-735. (With K. S. Krishnan) | 346 |
| 39 | Disappearance and reversal of the Kerr effect. 1928. Nature. <u>121</u> , 794. (With S. C. Sirkar). | 358 |
| 40 | La constant de birefringence magnetique du benzene. 1927. C. R. Acad. Sci. Paris. <u>184</u> , 449-451. (with K. S. Krishnan) | 359 |

C.V. RAMAN — PAPERS ON THE SCATTERING OF LIGHT

- | | | |
|----|--|-----|
| 41 | Magnetic double refraction. 1927. <i>Nature</i> .
<u>119</u> , 528-531. (With I. Ramakrishna Rao) | 362 |
| 42 | The magnetic anisotropy of crystalline
nitrates and carbonates. 1927. <i>Proc. R.</i>
<i>Soc. London 'A'</i> . <u>115</u> , 549-554. (With
K. S. Krishnan). | 364 |
| 43 | A theory of electric and magnetic birefrin-
gence in liquids. 1927. <i>Proc. R. Soc.</i>
<i>London 'A'</i> . <u>113</u> , 511-519. (With K. S.
Krishnan). | 370 |
| 44 | A theory of the optical and electrical pro-
perties of liquids. 1928. <i>Proc. R. Soc.</i>
<i>London 'A'</i> . <u>117</u> , 589-599. (With K. S.
Krishnan). | 381 |
| 45 | The Maxwell effect in liquids. 1927. <i>Nature</i> .
<u>120</u> , 726-727. (With K. S. Krishnan) | 392 |
| 46 | A theory of the birefringence induced by
flow in liquids. 1928. <i>Phil. Mag.</i> <u>5</u> ,
769-783. (With K. S. Krishnan) | 394 |
| 47 | The scattering of light in amorphous solids.
1927. <i>J. Opt. Soc. Am.</i> <u>15</u> , 185-189. | 409 |
| 48 | The molecular scattering of light in binary
liquid mixtures. 1927. <i>Phil. Mag.</i> <u>4</u> ,
447-448. | 414 |
| 49 | A theory of light-scattering in liquids. 1929.
<i>Phil. Mag.</i> <u>5</u> , 498-512. (With K. S.
Krishnan). | 416 |
| 50 | A theory of light-scattering in liquids. 1929.
<i>Phil. Mag.</i> <u>7</u> , 160-162. | 431 |
| 51 | Optical behaviour of protein solutions. 1927.
<i>Nature</i> . <u>120</u> , 158. | 433 |
| 52 | X-ray diffraction in liquids. 1927. <i>Nature</i> .
<u>119</u> , 601. (With C. M. Sogani). | 434 |
| 53 | X-ray diffraction in liquids. 1927. <i>Nature</i> .
<u>120</u> , 514. (With C. M. Sogani). | 436 |
| 54 | Thermal degeneration of X-ray haloes in
liquids. 1927. <i>Nature</i> . <u>120</u> , 770. | 438 |
| 55 | A critical absorption photometer for the
study of the Compton effect. 1928.
<i>Proc. R. Soc. London 'A'</i> . <u>119</u> , 526-530.
(With C. M. Sogani). | 439 |

LIST OF PAPERS

56	Thermodynamics, wave theory and the Compton effect. 1927. Nature. <u>120</u> , 950-951.	447
57	A classical derivation of the Compton effect. 1928. Indian J. Phys. 3, 357-369.	450
58	A new type of secondary radiation. 1928. Nature. <u>121</u> , 501-502. (With K.S. Krishnan).	463
59	A change of wave-length in light-scattering. 1928. Nature. <u>121</u> , 619.	465
60	A new radiation. 1928. Indian J. Phys. <u>2</u> , 387-398.	467
61	The optical analogue of the Compton effect. 1928. Nature. <u>121</u> , 711. (With K.S. Krishnan).	480
62	A new class of spectra due to secondary radiation, Part I. 1928. Indian J. Phys. <u>2</u> , 399-419. (With K.S. Krishnan).	482
63	The negative absorption of radiation. 1928. Nature. <u>122</u> , 12-13. (With K.S. Krishnan)	506
64	Polarization of scattered light quanta. 1928. Nature. <u>122</u> , 169. (With K.S. Krishnan)	508
65	Molecular spectra in the extreme infrared. 1928. Nature. <u>122</u> , 278 (With K.S. Krishnan)	510
66	The production of new radiation by light-scattering, Part I. 1929. Proc. R. Soc. London 'A'. <u>122</u> , 23-35. (With K.S. Krishnan).	512
67	Rotation of molecules induced by light. 1928. Nature. <u>122</u> , 882. (With K.S. Krishnan)	527
68	Investigations of scattering of light. 1929. Nature. <u>123</u> , 50.	528
69	Investigations of molecular structure by light-scattering. 1929. Trans. Faraday Soc. <u>25</u> , 781-792.	530
70	The molecular scattering of light, Nobel lecture. Les. Prix. Nobel. en 1930. Stockholm, Imprimerie Royale, P. A. Norstedt, 1931.	542
71	Colour and optical anisotropy of organic compounds. 1929. Nature. <u>123</u> , 494.	551

C.V. RAMAN — PAPERS ON THE SCATTERING OF LIGHT

72	Magnetic behaviour of organic crystals. 1929. <i>Nature</i> . <u>123</u> , 605.	552
73	The relation between colour and molecular structure in organic compounds. 1929. <i>Indian J. Phys.</i> <u>4</u> , 57-78. (With S. Bhagavantam).	554
74	Diamagnetism and crystal structure. 1929. <i>Nature</i> . <u>123</u> , 945.	576
75	A new X-ray effect. 1929. <i>Nature</i> . <u>124</u> , 53-54. (With P. Krishnamurti).	578
76	Anomalous diamagnetism. 1929. <i>Nature</i> . <u>124</u> , 412.	580
77	Diamagnetism and molecular structure. 1930. <i>Proc. Phys. Soc.</i> <u>42</u> , 309-320.	582
78	A new type of magnetic birefringence. 1931. <i>Nature</i> . <u>128</u> , 758-759. (With S. W. Chinchalkar).	594
79	Atoms and molecules as Fitzgerald oscilla- tors. 1931. <i>Nature</i> . <u>128</u> , 795.	596
80	Evidence for the spin of the photon from light-scattering. 1931. <i>Nature</i> . <u>128</u> , 114-115. (With S. Bhagavantam).	598
81	Angular momentum of light. 1931. <i>Nature</i> . <u>128</u> , 545.	600
82	Experimental proof of the spin of the photon. 1931. <i>Indian J. Phys.</i> <u>6</u> , 353-366. (With S. Bhagavantam).	602
83	Experimental proof of the spin of the photon. 1932. <i>Nature</i> . <u>129</u> , 22-23. (With S. Bhagavantam).	616
84	Doppler effect in light-scattering. 1931. <i>Nature</i> . <u>128</u> , 636.	618
85	Nature of thermal agitation in liquids. 1935. <i>Nature</i> . <u>135</u> , 761. (With B. V. Raghav- endra Rao).	620
86	Acoustic spectrum of liquids. 1937. <i>Nature</i> . <u>139</u> , 584-585. (With B. V. Raghavendra Rao).	622
87	Light-scattering and fluid viscosity. 1938. <i>Nature</i> . <u>141</u> , 242-243. (With B. V. Raghavendra Rao).	625

LIST OF PAPERS

- | | | |
|----|--|-----|
| 88 | New methods in the study of light-scattering, Part I: Basic ideas. 1941. Proc. Indian Acad. Sci. 'A' <u>14</u> , 228-234. | 628 |
| 89 | Determination of the <u>adiabatic</u> piezo-optic coefficient of liquids. 1939. Proc. R. Soc. London 'A'. <u>171</u> , 137-147. (With K. S. Venkataraman). | 635 |
| 90 | Spectroscopic investigation of the solid and liquid state. 1942. Curr. Sci. <u>11</u> , 225-227. | 646 |
| 91 | The nature of the liquid state. 1942. Curr. Sci. <u>11</u> , 303-310. | 649 |
| 92 | The α - β <u>transformation</u> of quartz. 1940. Nature. <u>145</u> , 147. | 657 |
| 93 | Lattice <u>oscillations</u> in crystals. 1939. Nature. <u>143</u> , 679. | 660 |
| 94 | Scattering of <u>light</u> in crystals. 1945. Nature. <u>155</u> , 196-197. | 662 |