TABLE II

Strengths of emission lines from Jupiter's magnetosphere for known species

Species	Wavelength of emission line[3] [Å]	Predicted strength[1] [rayleigh]	Observed strength[2] [rayleigh]	Date of observation	Author	Comment
SII	4068.6	235	62 ± 32	Jan–Mar 1979	Morgan and Pilcher (1982)	Long slit spectrograph No guiding leading to 2–3″ drifts
			10–80	Feb–May 1981	Morgan (1985a)	As Morgan and Pilcher (1982)
SII	4076.4	70	≈40	Jan–Mar 1979	Morgan and Pilcher (1982)	Long slit spectrograph No guiding leading to 2–3″ drifts
SII	6716.4	1060	0–100	Oct 1976	Trauger *et al.* (1980)	1.5 R_J diameter aperture spectrograph
			20–170	Jan 1976–Mar 1978	Trafton (1980)	29 × 0.3″ slit parallel or perpendicular to Jupiter's spin axis. Data averaged over slit.
			50–800	Jan–Jun 1979	Trafton (1980)	See above
			131 ± 32	Jan–Mar 1979	Morgan and Pilcher (1982)	Long slit spectrograph No guiding leading to 2–3″ drifts
			≈300	Feb–Apr 1981	Brown and Shemansky (1982)	See corresponding note at 6731 Å
			≈220	Feb 1981	Oliversen *et al.* (1991)	Imaging data for a range of magnetic longitudes
			130–260	Feb–May 1981	Morgan (1985a)	As Morgan and Pilcher (1982)
			≈650	May 1983	Trauger (1984)	Imaging data
			390 ± 50	Dec 1989	Jockers *et al.* (1991)	Imaging with torus seen open
SII	6730.8	1280	0–70	Oct 1976	Trauger *et al.* (1980)	1.5 R_J diameter aperture spectrograph
			60–300	Sep–Oct 1975	Brown (1976)	Derived from Kipo *et al.* (1976)
			215 ± 28	Jan–Mar 1979	Morgan and Pilcher (1982)	Long slit spectrograph No guiding leading to 2–3″ drifts
			425 ± 230	Feb–Apr 1981	Brown and Shemansky (1982)	6.7 × 0.5″ slit. Feb data with long axis perpendicular to Jovian rotation axis offset by 5.9 R_J from Jupiter *in the satellite plane*. April data with long axis parallel to Jovian rotation axis offset by 5.9 R_j along centrifugal equator
			≈570	Feb 1981	Oliversen *et al.* (1991)	Imaging data for a range of magnetic longitudes
			200–400	Feb–May 1981	Morgan (1985a)	As Morgan and Pilcher (1982)
			≈850	May 1983	Trauger (1984a)	Imaging

TABLE II (continued)

Species	Wavelength of emission line[3] [Å]	Predicted strength[1] [rayleigh]	Observed strength[2] [rayleigh]	Date of observation	Author	Comment
			410 ± 50	Dec 1989	Jockers *et al.* (1991)	Imaging with torus open
			40–240	Jan 1976–Mar 1978	Trafton (1980)	29 × 0.3″ slit parallel or perpendicular to Jupiter's spin axis. Data averaged over slit.
			50–1600	Jan–Jun 1979	Trafton (1980)	See above
			2400	Unspecified	Trafton (1980)	See above
OII	3726.0	275	36 ± 7	Jan–Mar 1979	Morgan and Pilcher (1982)	Long slit spectrograph No guiding leading to 2–3″ drifts
			30–50	Feb–Mar 1981	Morgan (1985a)	As Morgan and Pilcher (1982)
OII	3728.8	225	27 ± 10	Jan–Mar 1979	Morgan and Pilcher (1982)	Long slit spectrograph No guiding leading to 2–3″ drifts
			20–35	Feb–May 1981	Morgan (1985a)	As Morgan and Pilcher (1982)
OII	7319.9					Undetected
SIII	3721.7	32	17 ± 8	Jan–Mar 1979	Morgan and Pilcher (1982)	Long slit spectrograph No guiding leading to 2–3″ drifts
			≈14	Feb–May 1981	Morgan (1985a)	As Morgan and Pilcher (1982)
SIII	3797.2					Undetected
SIII	6312.1	70	48 ± 5	Mar 1980	Brown (1981a)	0.32 × 0.05 R_J effective aperture centred at 5.9 R_J
			58 ± 40	Feb 1981	Brown *et al.* (1983)	
			≈260	May 1983	Trauger (1984a)	
SIII	9068.9	190				Roesler *et al.* (1984) observed this line but no results have been reported.
SIII	9530.9	480	≈500	Feb 1981	Oliversen *et al.* (1991)	Imaging data for many magnetic longitudes
			200–700	Apr 1982	Roesler *et al.* (1984)	
			≈2000	May 1983	Trauger (1984a)	Imaging
OIII	4363.2	7				
OIII	4958.9	19				
OIII	5006.9	53	<7 (west ansa) <3 (east ansa)	May 1981	Brown *et al.* (1983b)	0.05 × 0.3 R_J slit centred at 5.9 R_J on centrifugal equator
			11 ± 5	Dec 1990	Moos *et al.* (1991)	Derived from detection of the [OIII] 1661 Å, 1665 Å lines by the HUT using a 0.43 × 5.52 R_J slit.

TABLE II (continued)

Species	Wavelength of emission line[3] [Å]	Predicted strength[1] [rayleigh]	Observed strength[2] [rayleigh]	Date of observation	Author	Comment
			1200–32 000 (Io)	Feb 1990	Scherb and Schultz (1991)	5.2 × 5.2″ aperature. Emission intensity dependent on filling factor.
			<8000 (Io)	Autumn 1987	Schneider *et al.* (1989b)	Spectrograph plus CCD
OI	6363.8	≈3				Undetected
NaI[4]	5889.95 5895.92		≈10–30 000	Nov 1976–Jan 1977	Murcray and Goody (1978)	Image intensifer tube plus camera. Many other measurements have been made. Too numerous to list here.
KI	7664.91 7698.97		1000	Sep–Dec 1975	Trafton (1977)	
OI	1304		3.6 ± 2.0 (torus)	May 1981	Durrance *et al.* (1983)	Slit averaged emission (15″ × 110″)
			95 ± 12 (Io)	Jul 1986	Ballester *et al.* (1987)	≈6″ FWHM point spread function resolution at Io
SI	1429		2.5 ± 1.2 (torus)	May 1981	Durrance *et al.* (1983)	Slit averaged emission (15″ × 110″)
	1814		107 ± 12 (Io)	Jul 1986	Ballester *et al.* (1987)	≈6″ FWHM point spread function resolution at Io
SIV	1406		18 ± 7	Mar 1979–1984	Moos *et al.* (1985)	

[1] Predicted maximum intensity from the Voyager-type torus model for the western ansa with the torus seen edge-on.
[2] Peak intensities are quoted for imaging data. Ranges apply to multi-image sets of data.
3 With the exception of the UV transitions, wavelengths have been taken from Osterbrock (1989) and references therein.
[4] Wavelengths after Morton (1991).