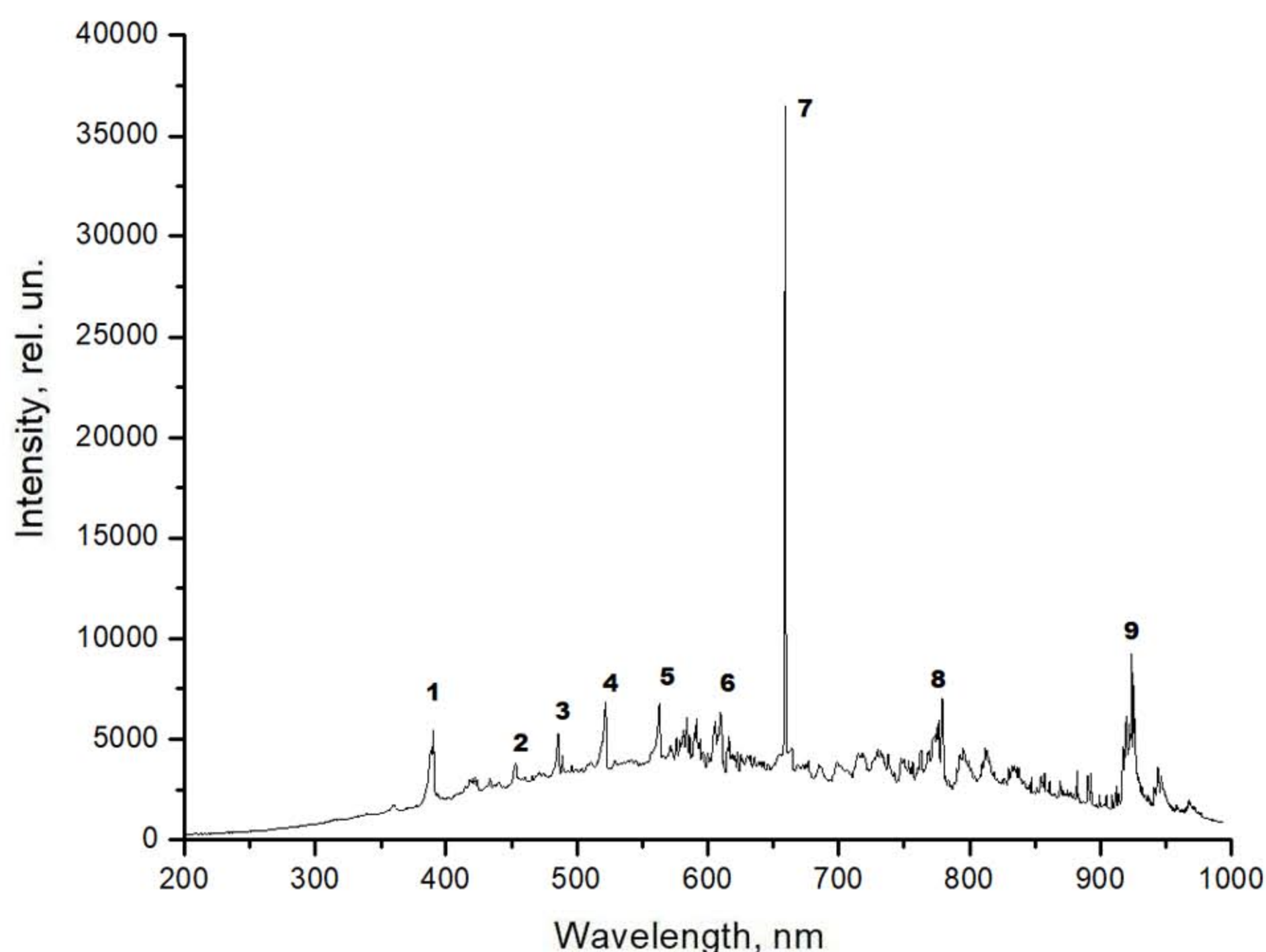
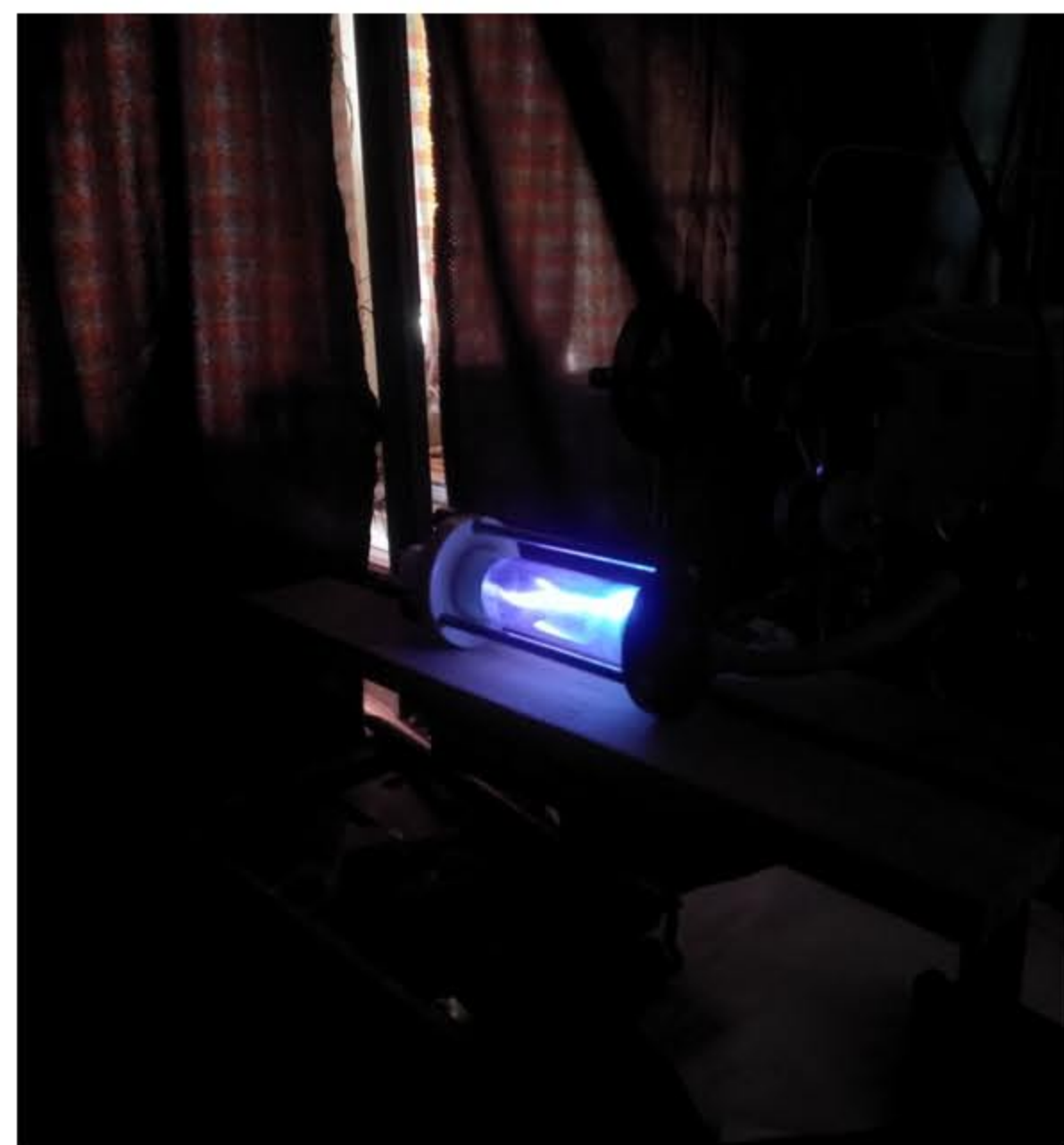
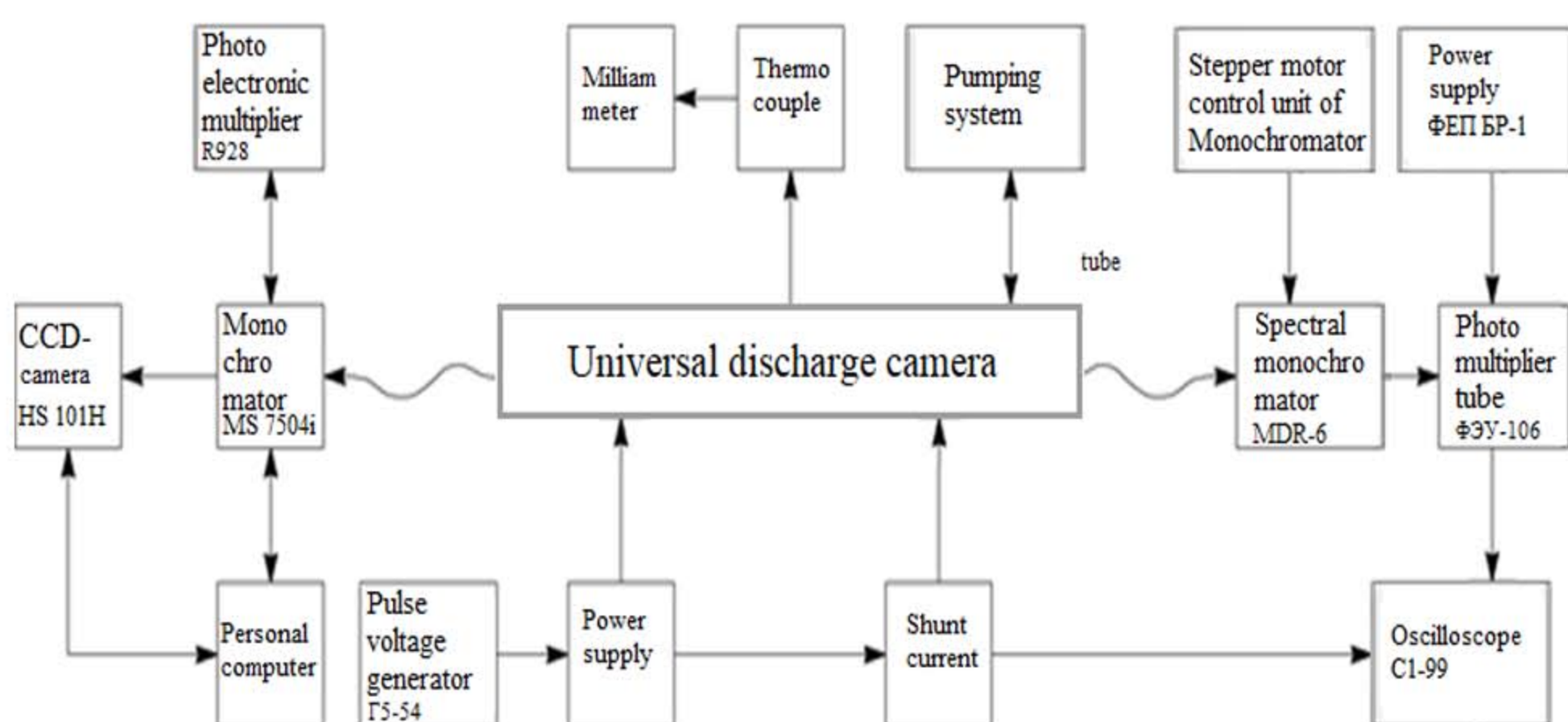
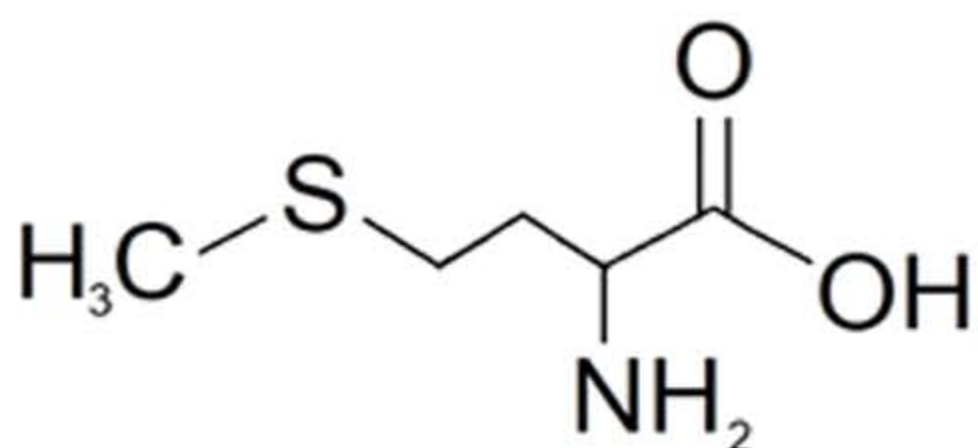


EMISSION PROPERTIES OF METHIONINE IN LOW-TEMPERATURE PLASMA

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The study of the interaction processes of methionine with components of gas discharge plasma is highly relevant given the rapid development of plasma medicine and oncology, as this sulfur-containing amino acid plays a critical role in the metabolism of tumor cells. Studying the mechanisms of fragmentation and stability of methionine's molecular bonds is essential for understanding the evolution of organic matter under extreme environmental conditions and deepspace conditions.



No.	Wavelength (nm)	Species	Electronic Transition / System
1	390.0	CN/CH	Violet system / $B^2\Sigma^- \rightarrow X^2\Pi$
2	451.1	CO	$B^1\Sigma^+ \rightarrow A^1\Pi$ (Ångström system)
3	486.1	H_β /CO	$n = 4 \rightarrow n = 2$ / $B - A$ (0,1)
4	516.5	C_2 /CO	Swan bands / $B - A$ (0,2)
5	563.5	C_2	$d^3\Pi_g \rightarrow a^3\Pi_u$ (Swan bands)
6	607.5	CO	$b^3\Sigma^+ \rightarrow a^3\Pi$ (Asundi system)
7	656.3	H_α	$n = 3 \rightarrow n = 2$ (Balmer series)
8	777.4	OI	$3p^5P \rightarrow 3s^5S^o$
9	922.8	SI	$4p^3P \rightarrow 4s^3S^o$

For the first time, the luminescence of the plasma mixture and the emission spectra of methionine molecules were experimentally investigated in a low-temperature longitudinal pulse-periodic discharge plasma. It was established that under the influence of the plasma discharge, intensive fragmentation of methionine molecules occurs, involving the destruction of major functional groups and the formation of several light gas-phase products and radical compounds.