# SATELLITE LINES OF Kα SPECTRUM IN ELEMENTS OF THIRD PERIOD

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## ABSTRACT

The characteristic energies of main lines at X ray emission spectra can to chance when are present chemical bonds with ligand atoms. Furthermore, satellite lines close a parent can be formed [1]. In this work the satellite lines $K\alpha_{3,4}$ and $K\alpha_{5,6}$ in elements of third period (Al, Si, P and S) were studied by means of X-Ray Fluorescence (XRF) and Electron Probe Microanalysis (EPMA). These lines appears at higher energy that the main line $K\alpha_{1,2}$, and are produced by relaxation process in atoms with multiple ionizations.
It was verified that these lines have higher intensities in ionic compounds that in covalent compound. The results also showed that the different excitation modes that use both techniques (photons in XRF and electrons in EPMA) have influence in relative intensities of satellite lines studied.

***Keywords: Satellite lines; X-Ray; Fluorescence; Electron Probe Microanalysis***

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# STUDY OF THE CATION EXCHANGE CAPACITY OF ZEOLITES AND ITS RELATION WITH SPECTRUM PARAMETERS OF IONS EXCHANGED

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## ABSTRACT

Zeolites are minerals highly crystalline of the hydrated aluminosilicates family, they have common structural characteristics with channels and cavities of molecular dimensions where the compensation cations ($Na^+$, $K^+$, $Ca^{2+}$, $Sr^{2+}$, $Ba^{2+}$, $Mg^{2+}$,...), water molecules, or others adsorbates and salts are situated. The physicochemical and microporous properties provide unique aspects for a great diversity of applications. The cation exchange capacity (CEC) is an essential characteristic of zeolites that allow them to modify and to fit considerably their properties for sundry uses [1].
This work studies the CEC of 5A and 13X synthetic zeolites for remove heavy metal ions such as $Cr^{3+}$ y el $Cu^{2+}$, by means of high resolution absorption and emission $K\beta$ spectra which were obtained with synchrotron radiation monochromatic excitation [2-5]. The absorption spectra were generated by fluorescent way from valence band of Cr and Cu exchanged in both types of zeolites. The relation between the CEC of these zeolites with the spectrum parameters of Cr and Cu (energetic positions, natural wides and integrated intensities) were determinated. It was also achieved to characterize chemical and physically the ionic exchange with $Cr^{3+}$ y el $Cu^{2+}$ carried out in these synthetic zeolites. This results give relevant information that can be applied in diverse areas, particularly in Cr(VI) retention. This pollutant of high-toxicity for biological systems (especially for humans) uses it in galvanized, tannery and textile industries.

***Keywords: Zeolites, Cation exchange capacity, Synchrotron radiation.***

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