



## **Preliminary studies of stable sulphur isotope composition in SO<sub>2</sub> gas using negative ionization mass spectrometry.**

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The SO<sub>2</sub> gas prepared from the studied sulphide or sulphate samples is frequently used in the stable sulphur isotope analysis. In commonly used methods of SO<sub>2</sub> isotope analysis the positive ionization of SO<sub>2</sub> is applied. The resulting ions of SO<sub>2</sub><sup>+</sup> or SO<sup>+</sup> are then analyzed mass spectrometrically and respective (for isotope <sup>32</sup>S and <sup>34</sup>S) ion currents for the ion beams are measured.

In our studies we employed negative ionization method for the isotope analysis in SO<sub>2</sub> gas. For this purpose we used the constructed in our lab mass spectrometer with the negative ion source previously built for the chlorine isotope analysis [1,2]. As the efficiency of negative ionization of SO<sub>2</sub> is relatively low, the new detecting system was assembled and used in the studies. This allowed us to detect several types of negative ions which are generated by the electron attachment to the SO<sub>2</sub> molecules. In measurements we were able to detect of intense ion signal of S<sup>-</sup>, SO<sup>-</sup> SO<sub>2</sub><sup>-</sup> with their isotope representation. This gives us possibility to determine not only standard <sup>34</sup>S/<sup>32</sup>S ratio but also <sup>33</sup>S/<sup>32</sup>S and <sup>33</sup>S/<sup>34</sup>S ratios. In the presentation more detailed data will be presented on this achievement.

3] A.Pelc, S.HaŁ as, (2008), Negative ion source for chlorine isotope ratio measurements, Rapid Commun. Mass Spectrom., 22, 3977–3982.

[4] S. HaŁ as, A. Pelc (2009) New isotope ratio mass spectrometric method of precise δ<sup>37</sup>Cl determinations, Rapid Commun. Mass Spectrom. 23, 1061–1064.