

## SUMMARY

This study is focused to the research of the fullerenes stability in organic solvents, their stability in the system with simple aromatic hydrocarbons and compares the decomposition of the C<sub>60</sub> and C<sub>70</sub> fullerenes. There exist no studies, which would have systematically described the behaviour of fullerenes in common solvents like toluene, cyclohexane or heptane. Sometimes some authors found fullerenes in the rocks and the others in the same sample did not. One of the possible explanations could be the decomposition of fullerenes in the process of C<sub>60</sub> extraction from the rocks. It was observed that quite a large amount of fullerenes is decomposed during the boiling in toluene, experiment with cyclohexane and n-heptane brought much better results. The oxidation products of toluene were described by the NMR and HPLC analytical method, which showed that the main products of pure toluene oxidation are benzylalcohol, benzaldehyde and probably benzoic acid. These substances probably could attack the double bonds in the molecules of fullerenes by the radical way and cause their destruction. This process could be very important because lots of published results were made by experiments when toluene was used for extraction. After these findings some experiments were prepared with radical reactions inhibitors and with argon (as an inert atmosphere) to stop or slow the oxidation of toluene. Next result is that the small relative decomposition in solution of toluene with higher concentration of fullerenes showed only a limited number of fullerene-attacking elements, like ozone or oxidation products of toluene. In solutions of fullerenes and simple aromatic hydrocarbons obvious decomposition of fullerenes was observed, the C<sub>60</sub> fullerene is more susceptible to the decomposition by the hydrocarbons than C<sub>70</sub>. This could mean that the C<sub>60</sub>/C<sub>70</sub> ratio in fullerenes containing rocks is changing during the geological time.