Modern civilization is confronted with a worldwide rise of atmospheric pollution due to the expansion of industrial and agricultural areas as well as urban settlements. Volatile organic compounds (VOCs) and inorganic odorous compounds (VICs) pose hazards to the global ecosystem, health of human beings and plants vegetation forming a significant part of indoors/outdoors pollution created by gases emitted from certain solids or liquids.

The biopurification of the off-gases containing low concentration of volatile (in)organic compounds is gaining particular attention due to high cost-effectiveness (low investment and operating expenses), treatment efficiency and environmental acceptability as odorant removal/cleaning procedures are based on the natural ability of microorganisms to degrade odorous/toxic contaminants from industrial/municipal airstreams and operate in the mild conditions (at around ambient temperature and atmospheric pressure).

The principal objective of the experiments was to specify operating boundaries of parameters governing the reactor execution at which the sampled microorganisms are most effective in decomposing and deodorization of gaseous streams containing styrene, ethanol and dimethyl sulfide mixture. We studied the efficiency of pollutant biodegradation at changing variable conditions of bioreactor operation especially at dynamic variations of pollutant load.

The sulfur-containing derivatives and their metabolites, regarded as 'old devils of green'chemistry, constitute a relevant class of air/water/soil contaminants in over-polluted world). In fact, some industrially-engineered solvents have become environmentally unfavorable. Growing public awareness of the need for environmental protection is the major driving force behind more rigorous regulations concerning release of hazardous pollutants and reduced sulfur compounds (RSCs) as well.

An attractive alternative to commonly used industrial liquids is sulfolane ($C_4H_8SO_2$), an anthropogenic medium. Under standard conditions sulfolane is not aggressive towards steel, but at higher temperatures and in oxygen, water, or chlorides presence, it can be decomposed into some corrosive (by-) products with generation of SO_2 and subsequent formation of corrosive H_2SO_3.

In particular, a comprehensive evaluation of the aqueous phase impact on general and localized corrosion of AISI 1010 and AISI 304L steel in sulfolane is presented. The main objective of the presented case study was to verify applicability of industrial, multi-electrochemical technique for reliable detection of corrosion in low conductive process fluids. Several aspects of corrosion measurement including the impact of process parameters (temperature) and impurities (oxygen and chlorides) on AISI 304L steel corrosion in pure sulfolane were investigated briefly. Assessment of corrosive damage on AISI 1010 steel was carried out using an open circuit potential method, potentiodynamic polarization curves, SEM/EDS and scanning Kelvin probe technique.