

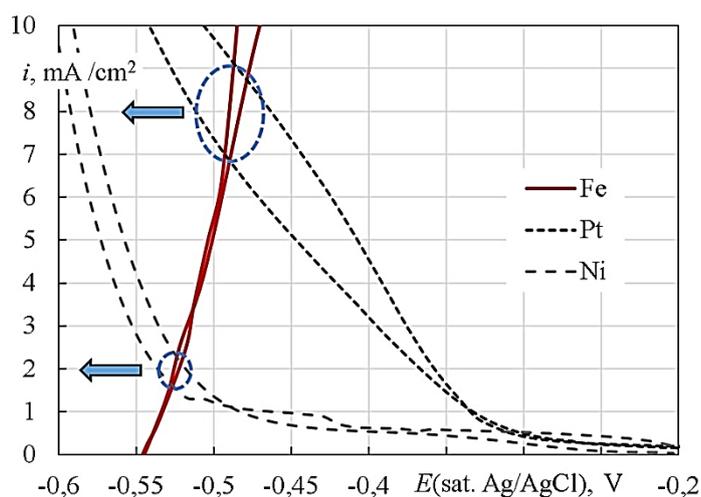
HYDROGEN GENERATION AT IRON DISSOLUTION IN ELECTROLYTES BASED ON HCl and NaCl

Bichai A. I.¹, Matveev V. V.^{1,2}, Nefedov V. G.^{1,2}

¹Ukrainian State University of Science and Technologies, Dnipro,
Lazoryan St., 2, 49010

²Institute of Geotechnical Mechanics NAS of Ukraine, Dnipro,
Simferopolska St., 2a, 49005

The possibilities of obtaining electrolytic hydrogen in the system in which the reaction of anodic dissolution of iron is used instead of oxygen evolution process are considered. The anodic polarization characteristics of iron and the release of hydrogen on Ni and Pt in a series of mixed solutions from 1M HCl (see fig.) to 1M NaCl were obtained. The intersection points of the anodic and



cathodic curves correspond to the short-circuiting of the electrodes, which allows obtaining hydrogen without the consumption of electricity at a rate of ~1 (Ni) and ~8 mA/cm² (Pt). This is significantly more

than with direct dissolution of Fe. At higher current densities (~100 mA/cm²), the polarization characteristics of hydrogen release on Ni and Pt converge, and the voltage required to achieve such current is ~ 0,6 V, which is significantly less than in the best modern H₂ - O₂ electrolyzers (~ 1,8 ÷ 2,2 V).