NANO IRON, s.r.o., VAT : CZ 28298055
Štefánikova 116, 664 61 Rajhrad, Czech Republic
Tel.: 513 033 633 • Fax: 547 230 212
e-mail: info@nanoiron.cz • http://www.nanoiron.cz

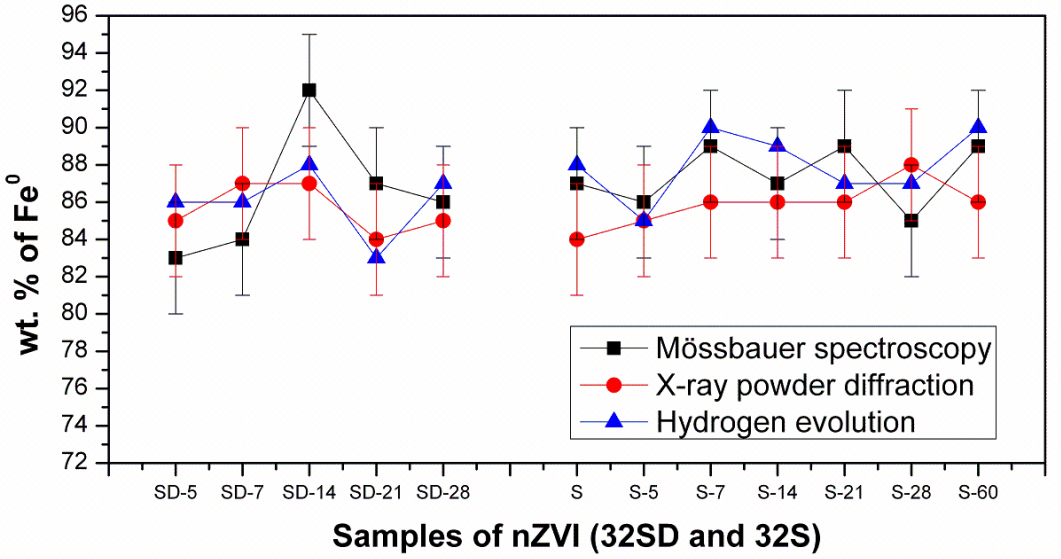
nZVI TESTER

the measurement of nZVI content in a product

nZVI TESTER provides simple and fast measurement of zero-valent iron concentration in a product, even under the field conditions. The apparatus can be used for analysis of nZVI content in dry powder or slurry.

The method is based on the measurement of hydrogen volume, which is evolving during chemical reaction of zero-valent iron and an acid. This test is very simple and particularly fair minded: the volume of hydrogen is directly proportional to the amount of ZVI. The amount of iron-oxides does not influence the volume of generated hydrogen, it only slows down the reaction speed.

The "Hydrogen method" has been compared to Mössbauer spectroscopy and X-ray powder diffraction - please see the following chart:



Reaction of nZVI and the acid proceeds according to the formula:

$$2KHSO_4 + Fe \rightarrow FeSO_4 + K_2SO_4 + H_2$$

$$55{,}85\ g\ Fe \rightarrow 22{,}41\ dm^3\ H_2$$

From the previous formula it comes through, that 22,41 dm^3 of hydrogen is generated by reaction of 55,85 g of iron and sufficient amount of acid ($KHSO_4$). The weight and the concentration of nZVI in slurry is consequently calculated from the volume of evolved hydrogen.