HLWYM HEmails

From: Xihua He
Sent: Thursday, March 09, 2006 6:22 PM
To: David Pickett
Subject: RE: More questions on carbon steel experiments

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My answers to the questions:

1. The diameter of the tiny hole is ~ 0.5 mm. I believe that hole is not easy to maintain equilibrium with atmospheric CO2 and O2 especially we kept the vessel in the oven, but we took the vessel out from the oven and opened the plugs for pH measurement at least twice a week. This will allow the solution to equilibrate with air. The evaporation during the first six days is not significant, probably a couple of mLs. After 14 days the evaporation is about 5 mLs. After 14 days I left for attending a conference. After I came back I noticed that only 1/5 of the solution left (~ 10 mL).

2. I believe the Fe concentrations were analyzed as filtered, which is the normal practice the Chem Lab does. Most Fe concentration is below the reporting limit (<2.00 mg/L). I need to find this out from the chemistry lab.

3. I don't know what is the degradation rate used by DOE. If you let me know I will answer that question.

4. I did XRD analysis for the corrosion product, which is mainly magnetite. The XRD results are attached.

XRDSpecimen.jpg

If there is further question, feel free to let me know.

Thanks,
Xihua

-----Original Message-----
From: David Pickett [mailto:dpickett@cnwra.swri.edu]
Sent: Thursday, March 09, 2006 3:35 PM
To: Xihua He
Subject: More questions on carbon steel experiments

Xihua,

I have some more questions on the carbon steel experiments. I think I've asked some of these previously, so thanks in advance for your patience.

We're trying to figure out the best way to constrain gases in our simulations. In your "second test," you had a "tiny hole open to air." Do you expect that this would maintain equilibrium with atmospheric CO2 and O2? Also, had much solution evaporated during the first six days? How much of the solution had evaporated by 14 days?

We were looking at the Fe concentrations of your experimental solutions. I think you said these were analyzed as unfiltered. Correct? It seems as though most of the measured Fe may be colloidal.

I realize you haven't directly measured steel mass loss, because your post-corrosion mass measurements include corrosion products. So I'd guess your mass losses are maxima for steel mass loss. Have you compared your maximum steel mass loss with what you'd expect from the degradation rate constants adopted by DOE?

Do you yet have any solid phase identification data?

Thanks,

David

Hearing Identifier: HLW_YuccaMountain_Hold_EX
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Subject: RE: More questions on carbon steel experiments
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From: Xihua He

Created By: xhe@cnwra.swri.edu

Recipients:
"David Pickett" <dpickett@cnwra.swri.edu>
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XRDSpecimen.jpg	102277	

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Priority: Standard
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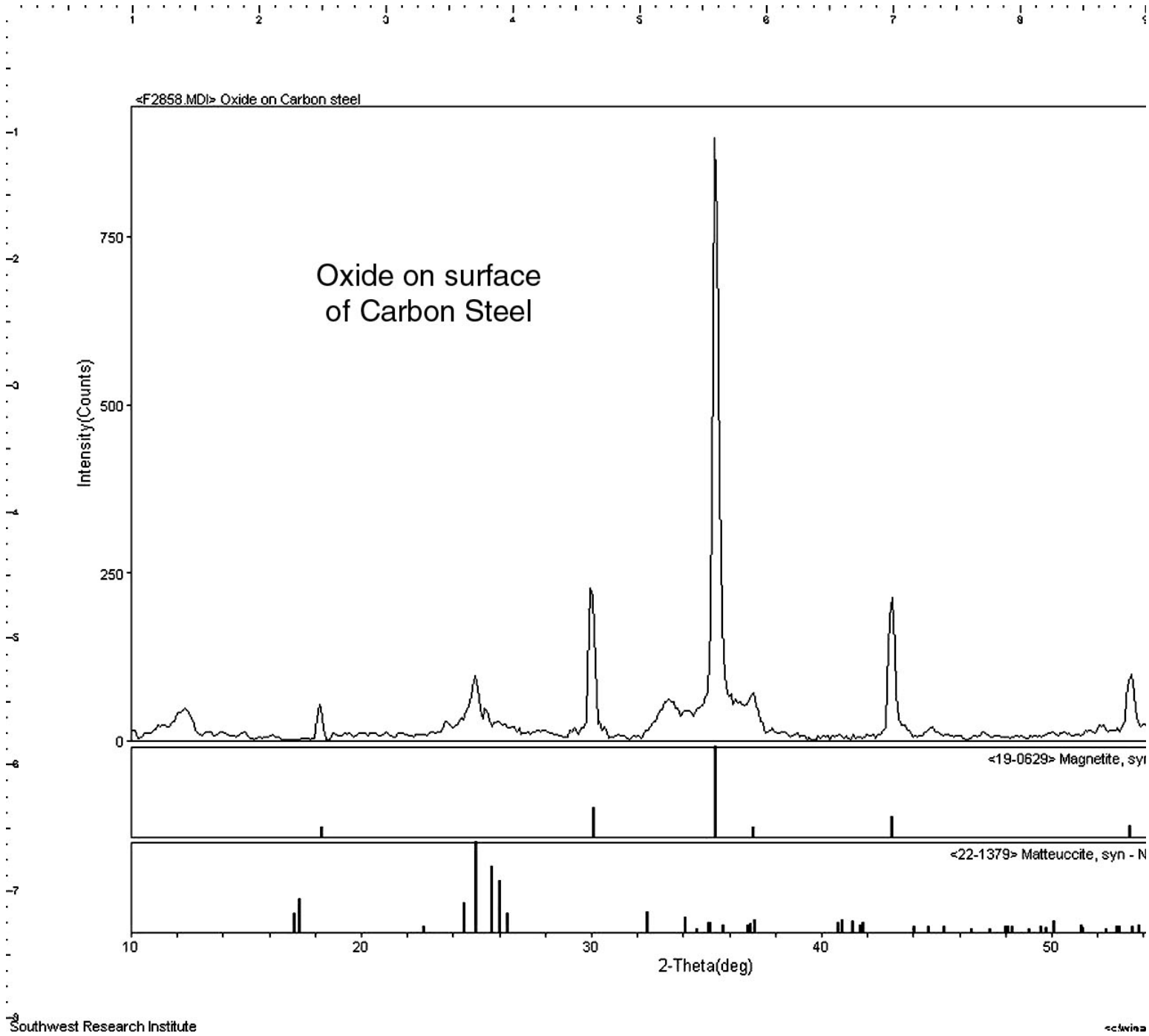
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