Discussion April 14, 2010: Nuclear Lunch Seminar

Profiling chlorine diffusion into ordinary Portland cement and pulverized fuel ash pastes using scanning MeV proton micro-PIXE
Jenneson et al., J. Mat. Sci. Lett. 17(1998)1173.

Prompt gamma analysis of chlorine in concrete for corrosion study
Naqvi et al., Appl. Rad. and Isotopes 64(2006)283.

Questions stimulated by the paper:

1. In the micro PIXE results how were the different samples prepared? Why does chlorine in samples C&D not drop with distance like in samples A&B? (Cody)

2. What is scanning in "scanning MeV proton micro-PIXE"? In PIXE, how is the concentration determined over a distance larger than 3 mm if the sample is only 3mm thick? (Tony L.)

3. In PIXE, we use X-ray spectrum to determine the material inside the concrete. What is the current measurement for? (Azamat)

4. What were the results of the study using PGNAA? (Youngshin)

5. Since PIXE takes less time and is more sensitive, why is PGNAA used? (Shloka)

6. Which one is more destructive PIXE or PGNAA? (Daniel)

7. What are the advantages of the methods discussed over regular chemical analysis? (Bing)

8. How can we produce X-rays? (Dilu)

9. The PIXE beam is a proton beam, could it have been an electron beam? (Chen)

10. What are the kinetic energies of incident neutrons in PGNAA? How these affect the results? (Anthony Paul)

11. What are the exact physical mechanisms behind the emission of prompt and delayed gamma-rays in neutron capture reaction? In which different situations do we use prompt gamma ray analysis and delayed gamma analysis? (Nowo)

12. Why search Chlorine only when many other elements can reduce the quality of the cement? (Jerry)

13. How to remove Chlorine from cement instead of just detecting it?

14. In around which year were these techniques established and started to be used industrially?

15. What are the Galileo writing?