PRAMANA — journal of physics

Vol. 78, No. 2
February 2012
pp. C333–C334

# Comment on: "Corrosion behaviour of low energy, high temperature nitrogen ion-implanted AISI 304 stainless steel"

S FLEGE

Technische Universität Darmstadt, Materials Science, Petersenstr. 23, 64287 Darmstadt, Germany
E-mail: flege@ca.tu-darmstadt.de

Ghoranneviss *et al* [1] have reported on nitrogen implantation into stainless steel and presented a secondary ion mass spectrometry (SIMS) measurement of the N and the CrN intensities with sputter time in figure 2. The experimental part described the measurement conditions, mentioning that $Cs^+$ primary ions were used and negative secondary ions were detected. A difference in the distribution of the CrN and the alleged N signal was observed and attributed to CrN acting as a diffusion barrier for nitrogen diffusion. It may be noted here that nitrogen does not form stable elemental negative ions [2] and is thus not detectable in SIMS measurements as $N^-$ [3]. Hence the signal with a mass-to-charge ratio of 14 is most likely some interference but definitely not nitrogen.

### References

[1] M Ghoranneviss, A Shokouhy, M Larijani, S Haji Hosseini, M Yari, A Anvari, M Gholipur Shahraki, A Sari and M Hantehzadeh, *Pramana – J. Phys.* **68**, 135 (2007)
[2] T Andersen, *Phys. Rep.* **394**, 157 (2004)
[3] R G Wilson, *Int. J. Mass Spectr. Ion Proc.* **143**, 43 (1995)

# Reply to the comment on: "Corrosion behaviour of low energy, high temperature nitrogen ion-implanted AISI 304 stainless steel"

ALI SHOKOUHY

Plasma Physics Research Centre, Science and Research Campus of Islamic Azad University,
P.O. Box 14665-678, Tehran, Iran
E-mail: a_shokouhy@yahoo.com

**DOI: 10.1007/s12043-011-0228-7**; ***e*Publication: 11 January 2012** 

*Comment*

The comment which you have put is strongly acceptable. Therefore please accept our apology for the lack of the required explanations in the experimental section of the paper. The traced species in SIMS analysis is the negative cluster ion of CN. Because of the uniformity of carbon concentration in the matrix, variation of CN can represent variation of elemental nitrogen. Moreover, variation of nitrogen is confirmed by the SIMS positive mode. This explanation could be added in the experimental section for more clarification.