Evolution of crust in the Dharwar craton: The Nd isotopic evidence

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The western and eastern Dharwar cratons (WDC and EDC) show appreciably different crustal evolution patterns as recorded by 333 whole-rock Nd isotopic data (including 34 unpublished data of the author). Both the cratons exhibit evidence of Palaeoarchaean crust (Fig. 1) whose rock record is either destroyed by later crustal reworking or awating to be discovered. In EDC 3-2.7 Ga is the most significant crust extraction period, whereas in WDC crust was extracted in two dominant episodes i.e. 3.5-3.2 and 3-2.9 Ga. Some komatiites and mafic volcanics of the older episode have considerably higher εNd values (>4.5) indicating that at least parts of the contemporary mantle was extremely depleted possibly due to extraction of crust during some earlier event(s). Younger mantle-derived rocks in the WDC (especially the 2.9 Ga mafic volcanics) do not show evidence of such extremely depleted mantle. This requires immediate refertilization of the mantle below WDC after the older episode of crust formation (~3.2 Ga). The Neoarchaean period in the WDC is characterized by some juvenile addition of crust and extensive crustal recycling during 2.7-2.6 Ga. For EDC contrasting source characteristics of contemporary mantle-derived Neoarchaean rocks (extremely depleted to chrondritic mantle) suggests juxtaposition of unrelated terranes by accretionary processes. The terminal Neoarchaean in EDC is characterized by granitoid formation from metasomatized mantle wedge as well as widespread crustal recycling.

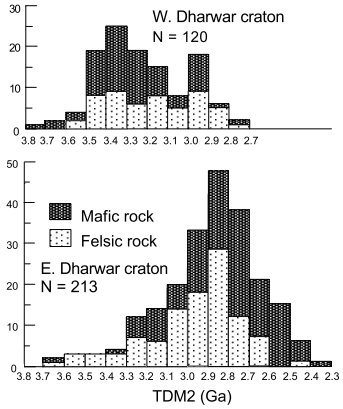

Figure 1: Distribution of depleted mantle model ages in the eastern and western Dharwar cratons.

Isothermal, kinetic and mechanism studies of uranium biosorption by *Aspergillus niger* from aqueous solutions

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Biosorption have emerged as an alternative technology for heavy metal and radionuclide removal from ground water contaminated due to mining sources [1, 2]. In light of this, present study has been carried out to investigate the biosorption potential of *Aspergillus niger* for removal of uranium form aqueous solution. Some concerned results are shown in Fig. 1.

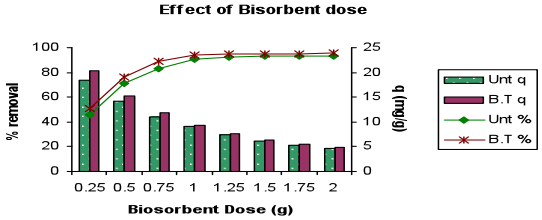

Figure 1: Effect of Biosorbent dose on biosorption of U (VI) on non-living *A. niger* biomass.

Discussion of Results

Uranium uptake at pH 5 and 100 μm particle size, Adsorbent dose of 10g/L and initial metal concentration of 100mg/L. Maximum uptake of 9.21 mg/g was observed after the Contact time of 75 minutes. Equilibrium data fitted well to Langmuir model and Uptake kinetic followed pseudo-second order model. Base treatment was found to enhance the metal removal ability of untreated biomass. The mechanism of process was gained by FTIR and SEM. IR spectra analysis revealed that Carbonyl and amino groups have played important role in U (VI) biosorption.The results are well in concordance with some earlier findings in that concern [3, 4].

[1] Crini (2006) *Biores Technol*. **97**, 1061–85.
[2] Vijayaraghavan *et al*. (2008) *Dyes Pigm*. **76**, 726–32.
[3] D. Humelnicu *et al*. (2011) *Journal of Hazardous Materials* **185**, 447-455. [4] Wang *et al*. (2010) *Journal of Environmental Radioactivity* **xxx**, 1-5.