SHORT COMMUNICATIONS

CURRENT SCIENCE: WHAT IT CITES AND WHAT CITES IT?

ROSHAN RAINA
Central Institute of Medicinal & Aromatic Plants, Lucknow 226016, India.

INDIA ranks third in the world in the number of researchers, behind the US and USSR[1]. A detailed study conducted by Eugene Garfield[2] (of ISI) reveals that India ranks at the top among all the "Third World"[3] countries in the number of articles its researchers authored in international journals and as covered by *Science Citation Index* (SCI). According to Garfield[4], India is also the Giant of "Third World" science, publishing about 60% of all the articles appearing in all the "Third World" journals.

Current Science[5] which has already completed its 50 volumes, ranks at the top[6] among all "Third World" publishing journals, publishing about (629/5843) × 100 *i.e.* 10.77% articles, of all the articles published by the "Third World" journals[4]. It published about (629/3486) × 100 *i.e.*, 18.04% articles of all the articles published by Indian scientific journals[4]. It also ranks at the top by publishing (620/629) × 100 *i.e.*,98.57% "Third World" articles[6]. According to number of citations, Gupta[7] ranks *Current Science* at number 2 among Indian scientific and technical journals as covered by the world's largest indexing data base, SCI.

These findings are sufficient enough to justify that *Current Science* is one of the main channels of communication among Indian Scientists, especially when one considers the figure that only 35% of all the articles by "Third World" authors are published in "Third World" Journals[8].

A look into the various packages of *Journals Citation Reports* (JCR) published by Institute for Scientific Information for SCI V. 14, 1980, reveals that *Current Science*[5] V. 49, 1980, contains 4540 citations from 2646 scientific publications, mainly journals. Out of these 4540 citations, 1994 citations (43.92%) have come from a core of 100 journals. A glance at this list of 100 journals indicates that 9 top ranking scientific journals[9] in the World, including *Journal of Biological Chemistry*; *Journal of the American Chemical Society*; *Nature*; *Proceedings of the National Academy of Science, U.S.A.*; *Journal of Chemical Physics*, *Biochimica Biophysica Acta*; and *Science* appear among the first twentyfive.

From the *Citing Journal Package of JCR*; 80, we find that *Current Science* was cited 1338 times in 1980 by 401 scientific publications, mainly journals. Out of these 401 scientific publications, a basic core of 41 journals cited it 730 times (54.56%). Out of these 41 journals, 27 are foreign and 14 Indian, which justifies its worldwide acceptance as an authentic medium of scientific communication.

However, it is seen that none, out of the 50 top ranking journals[9], is found in this list. This may partly be due to the fact that *Current Science* publishes highly specialized subject oriented research articles/notes rather than popular general science articles. The other reason could be that its circulation has to be increased manifold.

14 November 1984

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3. Kurian, G. T., (ed.) *Encyclopaedia of the Third World*, New York: Facts on File, 1981, 3 Vols.
4. Garfield, E., *Curr. Contents*, 1983, **26(33)**, 13.
5. Current Science is a fortnightly journal of research being published, since 1932, by Current Science Association, Bangalore.
6. Garfield, E., *Curr. Contents*, 1983, **26(33)**, 7.
7. Gupta, D. K., *Int. Inf. Commun. Education*, 1984, **3(1)**, 40.
8. Garfield, E., *Curr. Contents*, 1983, **26(33)**, 13.
9. *Science Citation Index: Journal Citation Reports*, 1980, **14**, 39.

SELF-DIFFUSION OF SODIUM IN SOIL

G. S. MUDAHAR and H. S. SAHOTA
Soil Science Laboratories,
Department of Physics, Punjabi University,
Patiala 147002, India.

SELF diffusion of metallic ions in soils has attracted the attention of geophysicists and soil scientists to de-

termine the conditions appropriate for the necessary uptake of nutrients by plants. Various factors such as soil bulk density, soil moisture content, pH and $CaCO_3$ content have been found to affect the diffusion of metallic ions in soils[1-4].

Rowell *et al*[5] studied self-diffusion of sodium in soil and found an increase in the diffusion coefficient of ^{22}Na with an increase in moisture content. Recently Staunton and Nye[6] reported that the ^{22}Na diffusion was independent of moisture content and bulk density. The present study was conducted to test the effect of soil bulk density and moisture content on ^{22}Na self-diffusion in silt loam soil of pH 8.5.

The diffusion coefficient (D) was measured by the method of Rowell *et al*[5] using the following equation of Schofield and Graham-Bryce[7] for the analysis:

$$Q_t/Q_\infty = \tfrac{1}{2}L(D.t/\pi)^{1/2}$$

where Q_t is the amount of ions which had diffused from active to non-active soil of the two half cells Q_∞ is one half of the total ^{22}Na in soil system, L is the length of cell in cm and t is the diffusion time (sec).

The results presented in table 1 indicate significant relationship between soil bulk density and moisture content. At 10% moisture level, as the bulk density increased from 1.25 to 1.6 g/cm^3, due to compaction the pores were probably filled giving continuous liquid phase by bringing water films into close contact. On further increasing bulk density to 1.75 g/cm^3 the soil particles were pushed much closer together. Hence the diffusing ions were forced to move around the particles which increased the tortuousness of diffusion path, resulting in the decrease in diffusion coefficient at 1.75 g/cm^3. The ^{22}Na ion-soil particle interaction was minimum at soil bulk density of 1.6 g/cm^3.

Further, the value of ^{22}Na self-diffusion coefficient increased with increase in the moisture from 10% to 20% (table 1). When moisture increases, the thickness of water films around soil particles increases reducing the chemical interaction of ^{22}Na ions with soil particles. Due to higher moisture content, the continuity of liquid phase increases resulting in increased diffusion coefficient.

Table 1 *^{22}Na self-diffusion coefficients.*

Effect of bulk density at 10% moisture		Effect of moisture content at 1.75 g/cm^3 soil bulk density	
Soil bulk density (g/cm^3)	D × 10^7(cm^2/sec)	Moisture content (W/w)	D × 10^7(cm^2/sec)
1.25	3.4 ± 0.3	10%	17.8 ± 1.2
1.45	12.1 ± 0.9	15%	26.2 ± 1.9
1.60	19.7 ± 1.3	20%	38.1 ± 2.8
1.75	17.8 ± 1.2		

3 July 1984; Revised 11 October 1984

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CATALYTIC DECOMPOSITION OF N_2O ON La_2MnMO_6 (M = Ni, Cu and Zn)

N. KAMESWARI, B. RAJASEKHAR, R. RADHA and C. S. SWAMY
Department of Chemistry, Indian Institute of Technology, Madras 600 036, India.

THE structure of a double perovskite allows stabilization of transition metal ions in their unusual oxidation states[1]. This has stimulated considerable interest in identifying oxide systems crystallising in this structure to understand the relation between solid state properties and catalytic behaviour[2]. The activity of La_2MnNiO_6 in the catalytic decomposition of 2-propanol has been reported earlier[3]. The catalytic activity of the compounds La_2MnMO_6 (M = Ni, Cu and Zn) towards the decomposition of N_2O is briefly discussed in this note.

The compounds have been synthesized by the solid state reaction between the component oxalate mixtures, by heating them in appropriate proportions in a Pt crucible, in air, at 960°C for 28 hr, with intermittent grindings. The compounds have been characterized by x-ray analysis, conductivity measurements using a two