The conventional ceramic or solid state method used for the preparation of these materials requires a high processing temperature >1400°C with prolonged hours of heating and grinding. The combustion process yields these products within a few minutes.

Conclusions

The fire or furnaceless synthesis method yields large surface area sinteractive metal oxides. Combustion can be flaming (gas phase) or smouldering (solid-gas) type. Being a solution process there is a control over stoichiometry, homogeneity and purity. It is easy to dope desired amount of impurity ions (Cr^{3+} in α-Al_2O_3). The overall process is simple, fast and energetically attractive.

Acknowledgement

The author is grateful to K C Patil, Emeritus Scientist (CSIR) for his encouragement and valuable suggestions and the CSIR, New Delhi for financial support.

Address for Correspondence
Tanu Mimani
Department of Inorganic and
Physical Chemistry
Indian Institute of Science
Bangalore 560012, India.

Addendum

Shridhar Gadre and K Babu,
Electrostatics in Chemistry, Part 4,
Resonance, Vol.4, No.12, p.13, December 1999.

Box 2. van der Waals (vdW) radii.

The Dutch physicist J H van der Waals suggested, in order to explain certain properties of gases, that molecules have a well-defined size. Later, appropriate radii have been assigned to atoms in molecules (by Pauling and others) using the contact distances from crystal structure data. These 'van der Waals' radii typically lie between 1.0 and 2.2 Å and are approximately 0.8 Å longer than the respective covalent radii. See Table 1 for a tabulation of vdW radii.