

A receptor-targeted near-infrared fluorescence probe for *in vivo* tumour imagingC. H. Tung *et al.**ChemBioChem.*, 2002, **8**, 784–786

Recent developments in biological imaging include peptide–fluorescent conjugates convenient for fluorescent imaging of biological samples. This paper reports use of a near-IR fluorescent probe conjugated to derivatized folic acid that is a model for receptor–ligand interaction. This method will find use in *in vivo* and *in vitro* binding and labelling assays specifically suited for tumour imaging.

Synthesis and reactivity of stanyloli-gosilanes IV[1]: From hydrido substituted stannasilanes towards stannasiloxanesU. Englich *et al.**Monatshfte fur Chemie.*, 2002, **133**, 931–943

Synthesis of novel compounds with tin-silicon bonds is becoming popular as precursors for polymeric materials. The authors report synthesis and reactivity of stannasilanes by solvolysis of hydrido-substituted stannasilanes. The structure of the compounds is confirmed by ^{119}Sn and ^{29}Si NMR and X-ray crystallography.

Thermal oscillations in the bromate-oxalic acid $\text{MnSO}_4\text{H}_2\text{SO}_4$ acetone system: A colorimetric studyS. Biswas *et al.**Can. J. Chem.*, 2002, **80**, 1204–1209

Belousov–Zhabotinskii oscillatory chemical reactions have been studied for understanding the mechanism of reaction and have been modelled mathematically. This study focused on the features of oscillations in a reaction containing potassium bromate, oxalic acid and MnSO_4 . The reactions are carried out in aqueous H_2SO_4 solution in presence of acetone and the associated thermal changes are recorded using a colorimeter. The authors observe that acetone and oxalic acid increase the oscillation frequency whereas MnSO_4 shows an opposite effect on the same.

Femto-second charge transfer dynamics of a modified DNA base: 2-aminopurine in complexes with nucleotidesT. Fiebig *et al.**ChemPhysChem.*, 2002, **3**, 781–788

Dynamics of DNA assemblies can be studied with 2-aminopurine, a fluorescent isomer of adenine. Femto-second charge transfer dynamics is reported for all four DNA nucleotides by quenching this fluorescent probe in various solvent and bio-molecular complex backgrounds.

Model simulation of Belousov–Zhabotinskii reaction containing oxalic acid and acetone as mixed organic substrate in CSTR modeV. R. Kulkarni *et al.**J. Indian Chem. Soc.*, 2003, **80**, 100–105

Field–Boyd mechanism is used to simulate the behaviour of Belousov–Zhabotinskii oscillatory reactions containing bromate–Ce(III)– H_2SO_4 –oxalic acid and acetone. The model describes the oscillatory behaviour in a CSTR with respect to variations in flow rate, in flow concentrations and Ce(IV) concentration.

Nano-scale soldering of metal nanoparticles for construction of higher-order structuresF. Mafune *et al.**J. Am. Chem. Soc.*, 2003, **125**, 1686–1687

Inter-connection among parts is a prerequisite to fabricate nano-devices from nano-particles. One can attempt ‘soldering’ nano-particles under laser irradiation. Mafune *et al.* are successful in preparing ‘nano-webs’ by soldering gold and platinum nanoparticles in water by laser ablation. The nanowebs are found to extend as wide as 0.1–1 μm . Nanowebs thus fabricated show the promise of making catalysts and nano-electric devices.

A simple simulator of protein crystallizationV. Gopalakrishnan *et al.**J. Appl. Crystallogr.*, 2002, **35**, 727–733

A physical model of crystallization behaviour of proteins under varying physico-chemical environments in an aqueous solution is presented. The model has wide applicability since it can simulate crystallization behaviour over a broad range of conditions and rates of crystal growth. A tutor has been developed that can help novice crystallographers explore diverse crystallization conditions.

Water transport in plants obeys Murray’s lawMcCulloh, K. A. *et al.**Nature*, 2003, **42**, 939–942

Murray’s law can explain maximal design of hydraulic conductance of flow through the vascular network, though the same approach has not been applied to plant xylems. Based on Murray’s laws, the authors attempt modelling an optimal water transport system in plants that cannot be achieved by pipe models.

Growth of flizzy dendrites’ in a random field of foreign particlesL. Granasy *et al.**Nature Materials*, 2003, **2**, 92–96

A polycrystalline structure can be formed from particles that is dependent on the additives and particles orientation. Additives and nucleating agents can influence formation of irregular ‘dizzy dendrites’ by perturbing crystal growth. Computer simulations demonstrate that manipulations in the crystal morphology are possible by controlling crystal orientations. The findings can be extended to large-scale crystallization conditions.

Imaging whole *Escherichia coli* bacteria by using single-particle X-ray diffractionJ. Miao *et al.**Proc. Natl. Acad. Sci. USA*, 2003, **100**, 110–112

A novel technique of single particle X-ray diffraction is employed to image whole *Escherichia coli* cells using 1% KMnO_4 solution as a fixative. The method is likely to evolve into imaging techniques for single biomolecules at near atomic resolution.

The objective criteria in deciphering the Indus script

M. Mishra

Indian J. History Sci., 2002, **37**, 311–319

The author re-examines the Indus script to draw parallels between numerals of the Indus script and the syllabic order of the ‘Mahasvarasutra’.