



REACTOR is an ESF-funded scientific programme for the promotion and interchange of research results in the areas of non-linear chemistry and non-linear science. The main emphasis is on the development of fundamental understanding at the molecular level of the processes leading to the formation of spatiotemporal structure and patterns in chemical and biochemical systems.

## **Information and News**

### **Meetings**

### **Grants and Positions**

### **Publications**

#### **Information and News**

The last ESF REACTOR workshop "Nonlinear phenomena in chemistry", took place in Budapest, 24-26 January 2003. The lists of talks and presentation slides can be found in [http://www.phy.bme.hu/deps/chem\\_ph/Etc/Reactor2003/reactor2003.html](http://www.phy.bme.hu/deps/chem_ph/Etc/Reactor2003/reactor2003.html).

Call for ESF Programme Proposals in the field of the physical and engineering sciences. The deadline for the submission of outline proposals for new PESC Programmes is 31 October 2003, with an expected launching date of approved Programmes in January 2005. Further information about this is available via the news section on the home page of the ESF site at <http://www.esf.org> (or directly at [http://www.esf.org/esf\\_article.php?language=0&activity=5&domain=1&article=343&page=935](http://www.esf.org/esf_article.php?language=0&activity=5&domain=1&article=343&page=935)).

European Young Investigator Award Scheme (EURYI) which will be launched on 15 September. The deadline for applications for support under this scheme is 15 December. Further information about this is also available in the news section of the ESF site.

#### **Meetings**

- The next REACTOR Meeting is scheduled for the first two weeks of September 2004 in Prague.

#### **Grants and Positions**

POSTDOCTORAL POSITION Reference number 47/2003. The Department of Biophysics is seeking a Postdoctoral Research Associate (BAT-O II a) to pursue an experimental project on "Convective Pattern

Formation of Autocatalytic Reaction Fronts" sponsored by the DLR for two years (with an optional third year). Requirements: A Ph. D. in Physics or Physical Chemistry is required. Experience in nonlinear dynamics or

hydrodynamics is welcome. Description: The candidate will study the propagation of nonlinear reaction fronts under normal and reduced gravity. Chemically driven local changes of density can lead to a hydrodynamic instability that causes highly interesting structures. These phenomena are frequently superimposed by instabilities that are induced by surface tension. In order to separate the effects arising from different sources, laboratory-based investigations will be accompanied by parabolic flight experiments supported by DLR and ESA. The project will be conducted in close collaboration with groups from Brussels, Paris, and Dresden.

For more information, please contact Prof. Dr. S.C. Mueller, [Stefan.Mueller@Physik.Uni-Magdeburg.de](mailto:Stefan.Mueller@Physik.Uni-Magdeburg.de)

The Otto-von-Guericke Universitaet strives to increase the number of women in science and therefore explicitly encourages qualified female scientists to apply. Please indicate in the application, whether you agree that your application / personal documents may be viewed by the Officer for Affirmative Action (Gleichstellungsbeauftragte) and that you consent to his/her presence during the interviews. Disabled persons with equivalent qualifications obtain preferential consideration.

Written applications, including the reference number, are accepted until 19 september 2003. Please send the applications to:

Otto-von-Guericke-Universitaet Magdeburg  
Dezernat Personalwesen  
PF 4120  
39016Magdeburg  
Germany.

Lectureship position in Mathematical Chemistry/Biology (5 years) in the Centre for Mathematics, City University London, UK.

The Centre for Mathematical Sciences at City University in London invites applications for the post of Lecturer in Applied Mathematics (on Lecturer A or B scale including London allowance, 24,325 - 35,813 GBP). The position is offered for a fixed term period of 5 years. Potential well qualified candidates should reinforce existing strengths of the centre ([www.city.ac.uk/mathematics](http://www.city.ac.uk/mathematics)). In particular, candidates from the fields of Mathematical Chemistry, Biology, Bioinformatics and Biophysics are strongly encouraged to apply. We are also interested in candidates whose research expertise is in advanced computation/numerics with applications to the above fields. Deadline for receipt of application documents is 19th September 2003.

Informal inquiries are possible by e-mail to Dr Razvan Satnoianu ([r.a.satnoianu@city.ac.uk](mailto:r.a.satnoianu@city.ac.uk), [www.staff.city.ac.uk/~razvan](http://www.staff.city.ac.uk/~razvan))

Application forms can be downloaded from [www.city.ac.uk/hr/jobs/apply.htm](http://www.city.ac.uk/hr/jobs/apply.htm)

## Publications

R. Dilão and A. Volford, Excitability in a Model with a Saddle-Node Homoclinic Bifurcation, *Discrete and Continuous Dynamical Systems-Series B*, 4 (2004) 419-434.

"In order to describe excitable reaction-diffusion systems, we derive a two-dimensional model with a Hopf and a semilocal saddle-node homoclinic bifurcation. This model gives the theoretical framework for the analysis of the saddle-node homoclinic bifurcation as observed in chemical experiments, and for the concepts of excitability and excitability threshold. We show that if diffusion drives an extended system across the excitability threshold then, depending on the initial conditions, wave trains, propagating solitary pulses and propagating pulse packets can exist in the same extended system. The extended model shows chemical turbulence for equal diffusion coefficients and presents all the known types of topologically distinct activity waves observed in chemical experiments. In particular, the approach presented here enables to design experiments in order to decide between excitable systems with sharp and finite width thresholds."

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**REACTOR Web sites:**

[http://www.chem.leeds.ac.uk/People/SKS/esf\\_reactor/esf\\_reactor.htm](http://www.chem.leeds.ac.uk/People/SKS/esf_reactor/esf_reactor.htm)

<http://www.esf.org/reactor/>

<http://www.esf.org>

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Submission of News, Information, Meetings, Grants and Publication Abstracts must be sent by e-mail to [newsreactor@sd.ist.utl.pt](mailto:newsreactor@sd.ist.utl.pt). The received information will be included in the next REACTOR Newsletter. Everyone is encouraged to pass this information to other colleagues outside the REACTOR network.

Previous Newsletters are posted in the REACTOR web site.

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