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Cover illustration

The principle of the laser diagnostics of combustion processes. A sheet of light crosses the flame of a Bunsen burner. Characteristic light emitted or scattered owing to the interaction of the laser light with chemical species in the flame is photographed in two dimensions with special cameras. The analysis of the spatially resolved light allows one to determine the temperatures, flow velocities and densities of different molecular species in the flame. Photograph courtesy of P. Andresen, Laser Labor Göttingen (see ECAMP-5, page 91).

Governments Can Help

Shaping Europe' R&D takes time so although the 4th European Union Framework Programme has hardly begun, discussion about the 5th is already underway. The European Science and Technology Assembly (ESTA) set up in March 1994 to ensure a direct permanent link between science, industry and the European Commission aims to synthesize many studies. J. Borgman, the Chairman, feels that the EU should be allowed to escape from the "dogma of pre-competitive research" into research that is closer to the market. So he recommends more sophisticated approaches to spending the limited EC funds (e.g., more collaboration with national agencies) and strategic industrial alliances with research aimed at profitable short-term innovation.

The Central European Initiative must act within this sort of scenario in seeking to rebuild a lasting fabric of regional links and facilities in science (p. 93). Persuading the EU to help will be difficult but not impossible provided proposals are excellent and relevant. This month's features discussing ultra-bright X-rays in areas traditionally assigned to neutrons (p. 78) and a novel approach for neutron sources (p. 90) highlight the sophisticated arguments one needs.

Few doubt the quality of Europe's contribution to science (and the unrealized potential in some parts), whether it be in discovering fundamental particles (p. 88) or in developing optics below the diffraction limit (p. 75). But governments, while saying they need to be convinced that science improves industrial competitiveness, sometimes forget their own restrictions.

Take patents. Patents make intellectual property more commercially valuable. H.G. Danielmeyer, the Siemens board member responsible for external relations, has repeatedly stressed Europe's poor record in protecting (and presumably exploiting) innovation using patents. Fortunately, the problems are often of a formal nature, at least in Germany. A proposal he has made to the federal government, aside from the reminder that industry attaches great importance to patents, lists specific measures. Patents should be put on the same legal basis as scientific publications and priority given to the date of application (not publication). But more important, the system of reimbursing a research grant if it led to a profitable patent should be dropped because much more is lost when an invention is not patented. People working in a government institution can rarely exploit a patent (and thus pay for an application) while companies with whom they collaborate are able to formulate a valuable patent. So one should allow patent rights to be transferred to industry provided the inventor is reimbursed under the same terms as a company's staff member. If the reimbursements exceed those from normal auxiliary activities they should be shared with the institution according to a 1/2:1/2 or a 1/3:1/3:1/3 formula.

P.G. Boswell