

Cut density gradient spin time with a Sorvall® RC-5 centrifuge and new SS-90 vertical rotor.



The Sorvall® RC-5 refrigerated superspeed centrifuge with a Rate Controller is ideal for density gradient work. The soft start and soft stop characteristics of the Rate Controller prevent mixing of the gradient at speeds between 0 and 1,000 rpm.

With this feature and the new Sorvall® SS-90 vertical rotor, the RC-5 provides high resolution with reduced spin times. The rotor holds the tube at a fixed angle of 0° while the gradient reorients from horizontal to vertical. This means the particle must travel only the width of the tube, not the length. It also improves resolution by increasing the surface area and reducing the depth of the starting zone. In fact, the K factor calculated for the ultracentrifuge swinging bucket rotor of comparable volume is 265, while the K factor for the SS-90 vertical rotor is 210. And since the SS-90 holds 8 tubes instead of 6, you can spin more total volume.

The Sorvall® RC-5 also features solid state speed and temperature control systems, direct reading tachometer and temperature gauge, and an instrument panel with convenient push-button controls. And it accepts RC-2B as well as RC-5 rotors. It is built with the high quality and attention to detail that have been characteristic of Sorvall® centrifuges for years.

For more information on the Sorvall® RC-5 centrifuge, just write Du Pont Instruments, Biomedical Division, Room 23708A, Wilmington, DE 19898

nation procedure. An advantage of this system is that carbon filtration following chlorination will remove chloroorganics formed in the chlorination process as well as excess chlorine. Furthermore, in light of the ecological concern, as well as the human health concern over chlorinated organics, it is becoming fashionable again to investigate use of water supply disinfectants other than chlorine.

Finally, who has informed public utilities that average householders are not willing to pay an additional \$7 per year for clean water?

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Energy and Inspiration

Philip H. Abelson's editorial "Energy conservation is not enough" (10 June, p. 1159) criticizes the National Energy Plan for not having enough "inspiration" and for providing "no basis . . . for the public to hope that America's technological capabilities will be effectively marshaled." This statement is inconsistent with the Plan as I read it. Specifically the Plan places tremendous—but realistic—dependence upon U.S. technology. Where else do we look to learn how to utilize coal resources in an effective way? Are we willing to claim that technology offers no hope of our achieving greater use of coal with less environmental impacts? Where else can we place our dependence if we are to develop much more efficient ways to utilize energy?

The great challenge offered in the National Energy Plan is to seriously commit this nation to substituting technological ingenuity for brute-force energy consumption. In the past we have over-focused on developing "gee-whizz" energy supply technologies. The Plan may bring us back a little closer to Earth, but it certainly doesn't lack for challenges to American technological leadership.

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In his editorial of 10 June, Abelson rightly points out that the National Energy Plan's "missing element is inspiration." I think we should be crasser. The missing element is financial incentive to find more fuels, to develop new technologies, and even to bring about more energy conservation.

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It takes supreme confidence for the Administration to set prices by bureaucratic fiat (as would be done for oil and gas) and then declare that the supply will come forth. If it does not come forth, we will find ourselves importing more oil and liquified natural gas or gasifying coal at a far higher cost than what we would have to pay the oil and gas moguls in the Southwest. For some reason, we are asked to take our chances on handing OPEC more money than on giving Texas any incentive to find more oil and gas.

The treatment of electric utilities is another example. The Plan offers the utilities little incentive to emphasize coal and nuclear technologies because it starts out with assumptions that make the job look easy. After all, it is estimated that fuel demand by the industry will grow only 5 percent per year without the Plan and 4.4 percent with it (1, p.95). Furthermore, the Plan will save the industry a colossal \$40 billion by 1985 if implemented (1, p. 97). These savings seem to be both dubious and thoroughly undocumented (2), and the fuel estimates seem to be no more than guesswork. But with such slow growth and huge savings on the way, the Administration provides few real financial incentives in the Plan to alter the fuel mix.

Finally, what incentives are provided to those who want to develop new energy sources, other than some tax credits that may or may not be high enough? When the price of conventional fuels is kept down exotic energy sources look less economic. For that matter, does the present research structure do the job? Can government agencies that are far from the marketplace and huge corporations that might be affected adversely by the development of new energy sources be expected to produce them? Perhaps the answer would be to create COM-SAT-like private corporations to develop and market new energy devices. They would clearly have the incentive to do so, because those devices would be their only sources of income (3).

If we are going to have a successful energy plan we have to harness the force that made American capitalism great: old-fashioned greed.

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References

1. Executive Office of the President, Energy Policy and Planning, *The National Energy Plan* (Government Printing Office, Washington, D.C., 1977).
2. M. Ray, *Electr. World* 187, 26 (15 June 1977).
3. L. S. Hyman, *Public Util. Fortn.* 99, 7 (6 January 1977).

Slash density gradient spin time with a Sorvall® OTD ultracentrifuge and new vertical rotor.



Sorvall® OTD ultracentrifuges with oil turbine drive and Automatic Rate Controller are ideal for density gradient work. The soft start and soft stop characteristics of the ARC and Reograd mode of deceleration prevent mixing of the gradient at speeds between 0 and 1,000 rpm.

With these features and the new Sorvall® vertical rotor, Sorvall® ultracentrifuges give high resolution with reduced spin times. The rotor holds the tube at a fixed angle of 0° while the gradient reorients from horizontal to vertical. This means the particle must travel only the width of the tube, not the length. It also improves resolution by increasing the surface area and reducing the depth of the starting zone. In fact, the K factor calculated for the highest performance ultraspeed swinging bucket rotor is 45, while the K factor for the Sorvall® TV865 vertical rotor is only 10.

The oil turbine drive eliminates failure-prone gears, belts and brushes. And Sorvall® OTD-50 and OTD-65 ultracentrifuges have self-contained cooling systems — eliminating problems with hard water as well as installation of plumbing, filters, valves and gauges. Both are built with the high quality and attention to detail that have been characteristic of Sorvall® centrifuges for years.

For more information on Sorvall® OTD ultracentrifuges, just write Du Pont Instruments, Biomedical Division, Room 23707A, Wilmington, DE 19898

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