solutions based on β-Si_3N_4 was reported to the meeting, and it was generally agreed that it showed the way forward to development of a range of new and promising materials. The ability of at least some of the solid solutions to densify during sintering without application of pressure or resort to reaction sintering will be an important advantage, although this must be at the expense of the unusual advantage of the close dimensional control associated with the reaction-sintering route. Preliminary information suggests that the thermal shock resistance of the new materials can indeed be good, and that they will not be deficient in strength. Corrosion resistance is highly promising, both with oxygen and with several molten metals at high temperature.

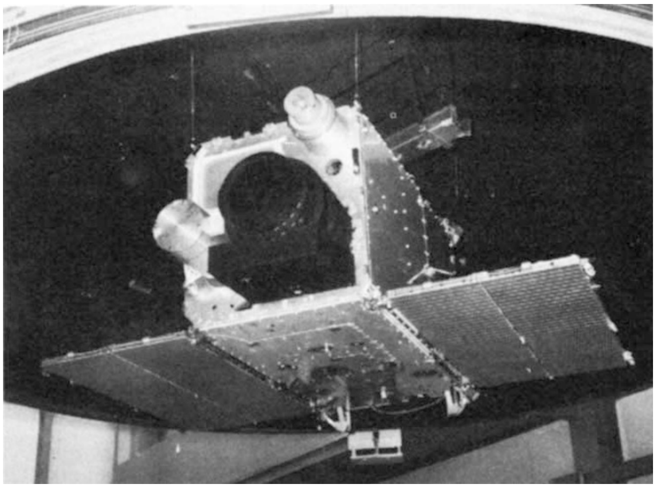
The most intriguing aspect of these new results, however, is the extensive range of compositions in the Si-Al-N-O and related systems that can clearly exist as single phases. There is close analogy with the family of silicates, both crystalline and vitreous. The structure of β-silicon nitride is based on SiN_4 tetrahedra joined at their corners (in threes). The substitution of aluminium for silicon now proved in this nitride is commonplace in the SiO_4 tetrahedra of the silicates, and incorporation of charge-compensating metal atoms of low valency is also familiar with the silicates. Substitution of oxygen for nitrogen in the SiN_4 tetrahedra of the nitride gives additional flexibility of composition. Thus, in essence, the new dimension in silicon nitride science and technology is the emergence of new materials built up of $(SiAl)(N,O)_4$ tetrahedra joined by sharing corners, just as silicates are built up of SiO_4 and $(Si,Al)O_4$ units.—From a Correspondent.

First Data from TD-1A

THE ultraviolet sky-scan telescope on board the European satellite TD-1A has been operational for almost four months (see *Nature*, **236**, 90; 1972) and the first data now reported by R. Wilson *et al.* in this week's *Nature Physical Science* (**238**, 34; 1972) indicate that the telescope is working satisfactorily. The spacecraft was developed and prepared by the European Space Research Organization (ESRO) and its contractors in Britain and Belgium; the ultraviolet sky-scan telescope, the largest of the seven experiments on board, is the joint responsibility of teams from Britain and Belgium.

The first ultraviolet stellar spectra were obtained in 1965 from a stabilized Aerobee rocket. Accurate pointing of optical axes, or at least something to compensate for motion, is required in both rocket and satellite experiments in order to achieve passbands of about 35 Å. For TD-1A the motion of the spacecraft causes the spectrum to sweep across three exit slits to provide sixty dated points in 3.3 s from 1350 Å to 2550 Å of every star detected.

The orbit of TD-1A is synchronous with the Sun, and the optical axis of the experiment always points away from the Earth. A thorough survey of the sky is therefore completed every six months. The preliminary results show data of good quality with every indication of them being reproducible—the spectral flux measurements reported are consistent to ± 3 per cent. An extinction curve for γ Columbae is presented which agrees well with some of the data obtained from the OAO-2A satellite.



Structural model of ESRO's TD-1A satellite suspended in position before space simulation tests at the European Space Research and Technology Centre, Noordwijk, Netherlands.

Ultraviolet astronomy is important because many of the resonance lines of the elements—prime indicators of the physics and chemistry of the media under observation—lie in the ultraviolet wavelength region. Data on the hotter stars, which have much shorter lives than stars such as the Sun, also become available from such observations. The interstellar medium may also be investigated by using the bright ultraviolet stars as background sources and observing absorption effects. For these reasons, ultraviolet astronomy has differed from X-ray astronomy in that emissions detected in the ultraviolet were predictable before the first measurements. There is the possibility, however, that some of the more exotic sources—for example the pulsating sources Centaurus X-3 and Hercules X-1, and Cygnus X-1 and Scorpius X-1—discovered by X-ray astronomers may also emit ultraviolet radiation. Ultraviolet spectra of these objects may help to throw more light on the operational mechanisms.

A previous satellite experiment on OAO-2A for observing ultraviolet radiation has proved interesting in that several objects radiate more in the ultraviolet regions than was expected. These Orbiting Astronomical Observations concentrate in particular on ultraviolet radiation and provide a stable platform from which detailed observations may be made. Unfortunately, the launch of OAO-B was a failure, but OAO-C, with an ultraviolet experimental package from Princeton University on board, is due to be launched next month. A joint University of London/University of Leicester X-ray telescope will also be on board and pointing in the same direction and will complement the Princeton experiment.

The ultraviolet sky-scan telescope on TD-1A will provide a useful survey of the sky and it is hoped that 20,000 stars, of which 6,000 will give usable spectra, will be detected. The OAO satellite experiments cannot hope to match this, but the detailed spectra may be better. Exciting data from the ultraviolet sky may thus become available from these complementary satellites during the next few months—From a Correspondent.