



Rare-earth Information Center **INSIGHT**

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Iowa State University / Ames, Iowa 50011-3020 / U.S.A.

Volume 4

February 1, 1991

No. 2

RIC - Hit by Desert Storm

A few days before the breakout of hostilities in the Middle East, Joel Calhoun of the Information Center was called up for active duty in the U.S. Navy. Joel served in the Navy in the early 1980's and was in the active reserves. We wish Joel good luck and a speedy return to Iowa and RIC. The loss of Joel for an indefinite time will have an affect on RIC, and it may be a few weeks (hopefully) before we will be operating more or less normally. In the meanwhile there may be some delays in responding to your inquiries for information, so please be patient. Jennings "Cap" Capellen has come out of retirement to help us for a few hours a day, but there is a ceiling on how much he can earn without affecting his retirement benefits. We hope to get additional temporary help to maintain our services but the details have not been worked out. We expect the March 1, 1991 issue of the RIC News to be out on time, since Joel had most of it written before he left.

Correction: Murray Basin, Western Victoria Deposit

Mr. S. V. McIntyre of Wimmera Industrial Minerals Pty. Limited, wrote us in late December to say that "Unfortunately, in my letter of October 24 on which you based the article [December 1, 1990 issue of RIC Insight, p. 2], I advised that we had a resource of 300,000 tonnes of monazite at the WIM 150 deposit. The correct figure is 580,000 tonnes which is unchanged from our earlier announcement in 1988.". The latter figure was quoted in the September 1, 1989 issue of RIC Insight.

Ceramic Markets

Business Communication Company (BCC) and Gorham Advanced Materials Institute (GAMI) predict substantial growth in ceramic materials through the 1990's. BCC states that the ceramic matrix composite market is expected to grow at a 14.6% annual rate in the USA, reaching a market value of \$509 million and 1.8 million pounds consumed by 2000, with oxide materials accounting for the largest share (~62% in 1990). The use of ceramic composites as cutting tool inserts is predicted to grow annually at a 12.5% rate and account for 20% of this portion of the market. Wear resistant parts and fibre reinforced ceramic composites are the largest segment (~40%) and are predicted to grow 24.5% annually. GAMI believes that the thermal spray market will expand at an annual rate of 7 to 8% from 1990 to 2000, with a market

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value of \$1.8 to 2.0 billion (in 1990 dollars) at the end of the decade. The thermal sprays are used in aircraft engine parts (see RIC Insight 2 [6] June 1, 1989) and other high temperature environment applications. Yttria-stabilized zirconia is one of the major materials in these ceramic markets. Yttria is also used as a sintering aid in the manufacture of Si_3N_4 and sialons which are also important ceramics. These rapidly growing markets will assure a continued expansion of Y_2O_3 consumption, not only in the USA but also worldwide, for the remainder of the last decade of the twentieth century.

Coatings for Magneto-Optic Discs

Scientists at the Division of Applied Physics CSIRO, just outside of Sidney, claim to have developed a 100% dense thin film coating for rare earth (Gd,Tb) - iron or cobalt magneto-optic storage discs [see RIC Insight 2 [10] (October 1, 1989) for more information about these discs]. The scientists headed by Phil Martin have applied a technique, which they pioneered, to come up with a thin, optically transparent layer to protect the (Gd,Tb) Fe alloy from oxidation and/or reaction with water vapor, which would destroy the magneto-optical properties and render the disc useless for information storage. The process is called ion assisted deposition (IAD), however, no details of the process or the coating materials are available to RIC. According to our sources IBM has a license to use this process on their magneto-optic storage discs.

Free-standing 1:2:3 Superconducting Film

Researchers at Florida State University have made 0.5μ thick $6 \times 6 \text{ mm}$ films of the $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ (1:2:3) superconductor which are unsupported (free-standing). The films are prepared by depositing the 1:2:3 superconductor on a thin carbon film, which is attached to a holder made of $\text{Y}(\text{Pr})\text{Ba}_2\text{Cu}_3\text{O}_{7-x}$. After laser ablation of the 1:2:3 material, oxygen is introduced into the system (10 Torr) while the temperature is slowly raised to 530°C . The carbon film is oxidized leaving the 1:2:3 unsupported film intact. These films have potential use as bolometers and infrared detectors.

Chinese Rare Earth Industry Study

Falmouth Associates announced that they planned to start a multiclient study of the Chinese rare earth industry in January 1991. This study will include a market appraisal, technical assessment and business forecast for the People's Republic of China for the fifteen year period 1990 to 2005. The report is expected to describe 80 rare earth producing/trading groups and assess their growing importance on the rest of the world producers and users of rare earths. For additional information contact Dr. Hugh D. Olmstead, Falmouth Associates, Inc., 170 U.S. Route One, Falmouth, ME 04105 U.S.A.; Telephone: 207-781-3632 and Fax: 207-781-4177.

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