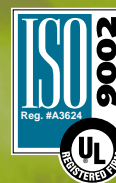




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EICHROM'S NEW PARIS FACILITY OPENS!

Eichrom's European customer base has grown considerably in recent years, necessitating a centrally located technical support and sales facility. The result is Eichrom Europe, S.A.R.L. located in Paris. Beginning this month, French customers can order directly from Eichrom Europe with payment in francs. Effective January 1, 1998, most other European countries will be able to purchase directly from Eichrom Europe with payment options available in many currencies. Our British and Irish customers can continue to purchase from Hichrom Chromatography in the United Kingdom.

In order to provide the same high level of customer support that you have come to expect from Eichrom, both Lesley Robertson and Richard Shaw — previously located at Eichrom Industries, Inc. in Auchtermuchty, Scotland — will relocate to the new Paris facility. United Kingdom customers can continue to use the U.K. telephone and fax numbers — (01337) 827 715 and (01337) 827 716, respectively — to access the Paris office.

To further augment our staff at the new Paris office, Eichrom has hired Michaela Langer as a European Product Manager. Ms. Langer is finishing her Ph.D. in radiochemistry at the University of Bonn in Germany and has several years of hands-on experience with radiochemical measurements in general and Eichrom's resins in particular. Her presence at Eichrom will allow us to offer technical support to our European customers in English, French and German.

These changes are a direct reflection of our commitment to this important market area; our goal being to provide the best customer service. As always, we encourage you to let us know how we are doing, and to make note of our new Paris address:

Eichrom Europe, S.A.R.L.
50, rue de Paradis
75010 Paris FRANCE
Telephone: (01) 53.34.17.24
Fax: (01) 47.70.36.88

“To further augment our staff at the new Paris office, Eichrom has hired Michaela Langer as a European Product Manager. Her presence at Eichrom will allow us to offer technical support to our European customers in English, French and German.”

TEVA RESIN



One of the more versatile of Eichrom's analytical products is TEVA Resin. It has been applied on a routine basis to the analysis of technetium, the measurement of the tetravalent actinides, and the separation of americium from lanthanides. It is used alone or can be readily combined with other resins to perform more elaborate separations of multiple analytes. It has even been applied to the analysis of gold in hydro-metallurgical applications.

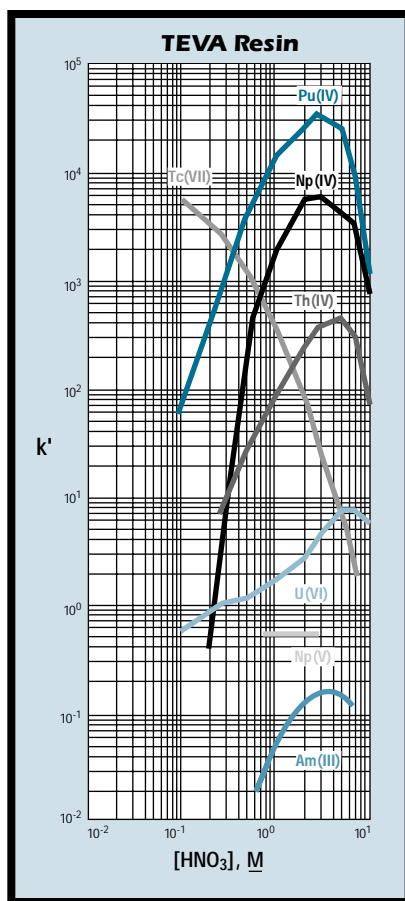


Figure 1: Nitric Acid Dependency of k' for Actinide Ions at 23°C.

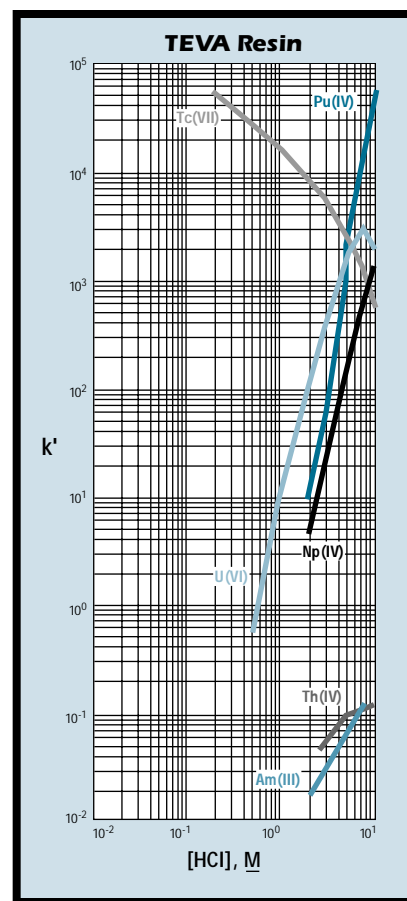


Figure 2: Hydrochloric Acid Dependency of k' for Actinide Ions at 23°C.

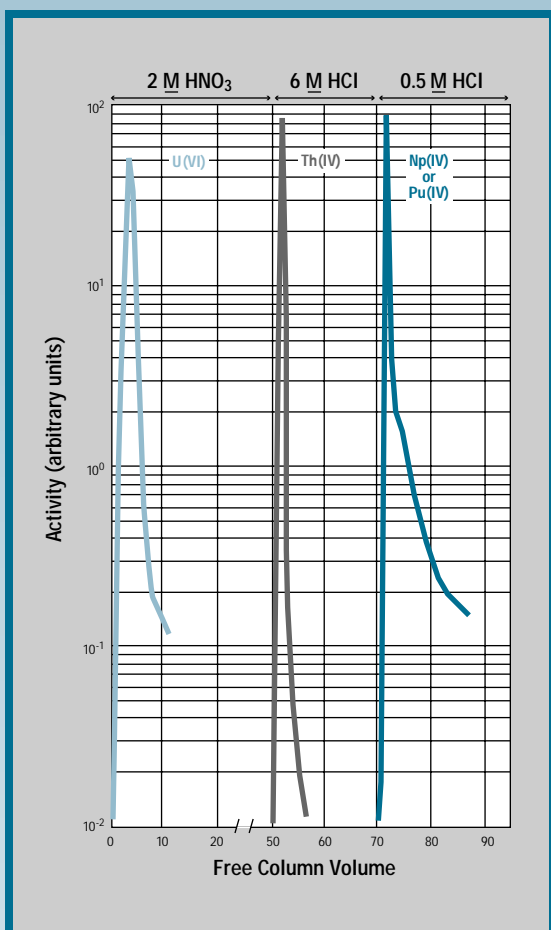
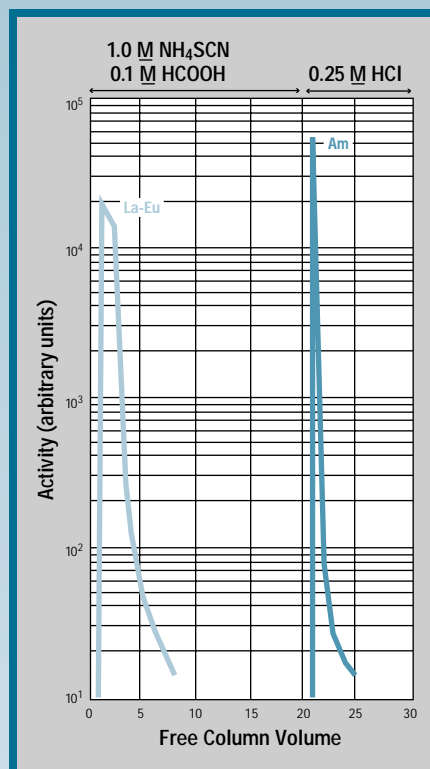


Figure 3 (left): The Separation of U(VI), Th(IV) and Np(IV) on TEVA Resin.

Figure 4 (below): The Separation of Light Lanthanides from Am(III) using TEVA Resin.



Although not shown on figures 1 and 2, neutral, and even basic solutions, show a strong uptake of technetium. Work performed by Darrin Mann's laboratory at K-25 in Oak Ridge demonstrated that the TEVA Resin can be used to isolate Tc-99 from a variety of matrices including alkaline solutions and neutralized acids. (See reference MA193.)

Another interesting use of the TEVA Resin is to separate americium from the rare earth elements. Figure 4 shows that the rare earths are eluted as a group in a load solution which comprises 1.0 M ammonium thiocyanate and 0.1 M formic acid. Americium is retained under these conditions and can be eluted later with hydrochloric

The active component of the TEVA Resin is an aliphatic quaternary amine. As such it has properties similar to those of typical strong base anion exchange resins. However, because the functional groups are in a liquid form, rather than fixed to a polymer backbone (as with IX resins) these groups have greater mobility to coordinate around target anions. This means that the uptake of these ions is generally higher, often at much lower acid concentrations.

This behavior is shown in figures 1 and 2, which are the acid dependency curves of TEVA Resin for the actinides and technetium from nitric and hydrochloric acid. Tetravalent plutonium, neptunium and thorium show maximum uptake in the region of 2 M to 4 M nitric acid. In this acid concentration range, hexavalent uranium and trivalent americium are not well retained, and as such, the resin can readily separate the tetravalents from the other actinides. This ability has been widely exploited. (See bibliography on TEVA Resin in this issue.)

The differences between the uptake curves for nitric and hydrochloric acid can be exploited to separate certain actinides from each other. For example, all the tetravalent actinides can be loaded from 3 M nitric acid. Valence adjustment may be required to assure that the actinides are tetravalent. Then, by switching to 6 M HCl, Th(IV) can be selectively eluted while Pu(IV) and Np(IV) remain on the column. An example chromatogram of a similar separation is shown in figure 3. Uranium is eluted with the 2 M nitric acid load solution, Th(IV) comes off with the 6M HCl and Np/Pu elute with more dilute HCl.

The retention of Tc(VII), pertechnetate, is also shown in figures 1 and 2. The resin takes up this anion strongly in solutions of lower nitric or hydrochloric acid concentration. The use of TEVA Resin in the analysis of Tc has become an industry standard. For more details on this application, refer to the technetium application references in the bibliography.

acid. Further examples of this application are shown in the bibliography.

Eichrom's TEVA Resin is a versatile tool which can be used in a variety of ways to separate radionuclides. For further information about using TEVA Resin, take a look at the articles listed in the bibliography or contact your local Eichrom representative.



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Recent Papers Highlighting Eichrom's TEVA Resin...

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Ham, G.J. "Determination of Actinides in Environmental Materials Using Extraction Chromatography." *7th International Symposium on Radiochemical Analysis*. Bournemouth, U.K., September 1994. (HG194).

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Until 12/31/97, these countries should
contact their local Packard office. In 1998,
contact Eichrom Europe, S.A.R.L.

All Other Locations

Contact Eichrom for the name of a
local representative



Back by Popular Demand: Eichrom's Original Column Design

If you have placed an order with Eichrom recently, you may have noticed that our original column design has been reintroduced. While both the original design and the design we introduced in 1996 were generally very well accepted by our customers, your comments to us indicated a preference for the original column design.

In 1996, we also introduced a new, stronger companion funnel. This new funnel has performed well with both column designs — significantly reducing instances of leaking. We will continue to supply this new funnel. To join the funnel with the original column design, insert the funnel into the column until a single click is heard. To remove the funnel, apply a light twisting motion.

Please contact your Eichrom representative if you have any questions about this change, or the fit between the new funnel and the original column.

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Announcements

EICHROM'S
BIOASSAY
CONFERENCE
WORKSHOP

» **November 10, 1997**

10:15 am – 12:00 noon

» **Francis Marion Hotel**

387 King Street
Charleston, South Carolina

The workshop will include presentations on the latest work with Eichrom's products by Dr. Bill Burnett of Florida State University, Michaela Langer of Eichrom Europe and other invited speakers.

For more information about the workshop contact Eichrom U.S. at: **(630) 963-0320**

For more information about the Bioassay Conference, visit the Bioassay Home Page at:

<http://mwanal.lanl.gov/bioassay/bioassay.html>