

NEWS RELEASE



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FOR IMMEDIATE RELEASE
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ZirChrom Separations awarded \$400,000 follow-up research grant to study nonporous zirconia for ultra-fast HPLC

ZIRCHROM Separations, Inc. (Anoka, MN) was recently awarded a \$400,000 Phase II SBIR Grant (#DMI-990871) from the National Science Foundation to develop monodisperse, carbon coated, nonporous zirconia microspheres as media for ultra-fast analytical high performance liquid chromatography (HPLC). Dr. Clayton McNeff, Vice President and Technical Director for ZirChrom, is the Principal Investigator conducting the research. This invention could revolutionize the chemical analysis of an extremely wide variety of materials including environmental toxicants and pharmaceuticals. The primary goal of the work is a 5 to 10 fold improvement in analysis time, leading to direct savings in operator, equipment depreciation, solvent purchase and waste disposal costs.

ZirChrom President Dr. Peter Carr explains the shortcomings of typical, state of the art silica based HPLC supports, “silica based supports limit the maximum speed and achievable resolution and require the use of excess toxic solvent because they are porous and cannot tolerate high temperatures. Silica phases are much more unstable than zirconia phases and thus cannot be used at temperatures significantly higher than 50°C.” In contrast, non-porous zirconia coated with carbon, the subject of the SBIR research, can be used at very high temperatures thereby reducing eluent viscosities and allowing small particles and high flow rates to be used. “Further,” Carr continues, “carbon being a highly retentive reversed phase medium also overcomes the low retention problems which plague the use of current commercial silica based nonporous media.”

Founded in 1995, ZirChrom manufactures a unique family of zirconia-based stationary phases made commercially available in the form of packed ZirChrom[®] analytical HPLC columns, ZirChrom[®] preparative HPLC columns and ZirChrom[®] guard columns. ZirChrom's eight packing chemistries cover all modes of modern HPLC including reversed-phase, normal phase, ion-exchange and size exclusion chromatography. The ZirChrom[®] line of HPLC columns is used in the analysis and purification of non-volatile compounds, pharmaceuticals, priority pollutants, insecticides, biochemicals and a myriad of other substances.

Zirconia based materials have significant advantages over silica and alumina based stationary phases due to zirconia's extraordinary chemical (pH 1-14) and thermal (up to 200⁰C) stability. Unlike polymeric materials, zirconia based materials produce superior efficiency, give highly reproducible separations, exhibit selectivity similar to traditional bonded phase materials for easier method development, and offer extraordinary solvent stability. Furthermore, zirconia has a high affinity for hard Lewis bases, which allows for complexation of the surface to produce a bio-compatible stationary phase useful for bio-molecule separation and purification.

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