

(dollars in thousands)

FY 2001	FY 2002	FY 2003
---------	---------	---------

dangerous chlorinated organic and phenolic pollutants (e.g., PCPs). Research on solid electrolytes has led to very thin rechargeable batteries that can be recharged many more times than existing commercial cells. Research on chemical vapor deposition (CVD) continues to impact the electronics industry. The development of synthetic membranes using biological synthesis may yield materials for separations and energy storage, and research on polymers may lead to light-weight structural materials which can be used in automobiles and thereby providing substantial savings in energy efficiency.

In FY 2003, work will continue on the systematic and parallel patterning of matter on the nanometer scale. There are many powerful approaches to patterning on the nanoscale that are fundamentally serial in nature, for instance, atom manipulation using scanning probe tips or electron beam lithography. The research in this activity will focus on methods to prepare macroscopic quantities of nanoscale components in complex, designed patterns, using techniques of self assembly. An increase is requested for research to understand how the shapes of molecular building blocks affect the spontaneous assembly into fibers, membranes, and other large-scale structures and to understand the effects of pressure, ionic strength, solvents, and external electric and magnetic fields on the shape and properties of the large-scale structures. This work on self-controlling materials lies at the interface of the physical sciences, molecular biology, and materials engineering. Both natural and synthetic molecules in combination can be used to make new molecular species, and the techniques of molecular self-assembly can be used to create new structures with new properties on the nanoscale. This work will focus on the study of simple structures and phenomena and on the emerging arsenal of tools and techniques such as combinatorial chemistry needed to explore the properties and structures of these new materials.

Capital equipment is provided for such items as chambers to synthesize and grow new materials, nuclear magnetic resonance and electron spin resonance spectrometers, lasers, neutron reflectometers, x-ray beamlines, and atomic force microscopes.

▪ **Experimental Program to Stimulate Competitive Research.....**                    **7,685**            **7,679**            **7,685**

This activity supports basic research spanning the complete range of activities within the Department in states that have historically received relatively less Federal research funding. The EPSCoR states are Alabama, Alaska, Arkansas, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, South Carolina, South Dakota, Vermont, West Virginia, and Wyoming, and the Commonwealth of Puerto Rico. The work supported by the EPSCoR program includes research in materials sciences, chemical sciences, biological and environmental sciences, high energy and nuclear physics, fusion energy sciences, fossil energy sciences, and energy efficiency and renewable energy sciences.

## EPSCoR Distribution of Funds by State

(dollars in thousands)

	FY 2001	FY 2002 Estimate	FY 2003 Estimate
Alabama .....	350	375	375
Alaska <sup>a</sup> .....	0	0	0
Arkansas.....	115	65	65
Hawaii <sup>b</sup> .....	0	0	0
Idaho.....	107	60	60
Kansas.....	933	615	615
Kentucky.....	468	471	471
Louisiana .....	130	130	130
Maine.....	0	0	0
Mississippi .....	652	535	535
Montana.....	515	465	465
Nebraska .....	480	300	300
Nevada .....	614	325	325
New Mexico <sup>b</sup> .....	0	0	0
North Dakota .....	0	55	55
Oklahoma .....	165	65	65
Puerto Rico.....	450	435	435
South Carolina.....	1,201	120	120
South Dakota.....	0	0	0
Vermont .....	585	585	585
West Virginia.....	794	525	525
Wyoming.....	59	65	65
Technical Support.....	67	400	400
Other.....	0	2,088 <sup>c</sup>	2,094 <sup>c</sup>
<b>Total .....</b>	<b>7,685</b>	<b>7,679</b>	<b>7,685</b>

<sup>a</sup> Alaska becomes eligible for funding in FY 2001.

<sup>b</sup> Hawaii and New Mexico become eligible for funding in FY 2002.

<sup>c</sup> Uncommitted funds in FY 2002 and FY 2003 will be competed among all EPSCoR states.