

## On-board Compression-Decompression Module for Hydrogen Using Ionic Liquids

Relevance to the Automotive Industry:	If hydrogen is to be used as a fuel either in cars equipped with fuel cells or with internal combustion machines, hydrogen has to be stored on board under high pressure. Even an on-board production of hydrogen is possible, e.g. by electrolysis of water if photovoltaic cells are used.	
Research Location:	TUD Thermal Process Engineering	VT
Homepage (Engl.):	<a href="http://www.tu-darmstadt.de/fb/mb/tvt/tvt-Dateien/tvt_en.html">http://www.tu-darmstadt.de/fb/mb/tvt/tvt-Dateien/tvt_en.html</a>	
Faculty Mentor:	Prof. Dr.-Ing. Manfred J. Hampe	
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Graduate Mentor:	Dipl.-Ing. Sebastian Lang	
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Project Description:	Ionic liquids are non-volatile substances with virtually no vapor pressure. They may be used as liquid pistons in compressors for gases. A former research project has revealed that it should be possible to combine compression and decompression into a single module. The research project is to continue with the detailed design of a high pressure compressor-decompressor module for hydrogen for on-board compression of hydrogen.	
Jun 9 - Aug 1, 2008; (8 weeks, 40h/week)		
Necessary Skills/ Knowledge:	<ul style="list-style-type: none"> <li>• Thermodynamics</li> <li>• CAD</li> </ul>	
Desirable Skills/ Knowledge:	<ul style="list-style-type: none"> <li>• Ability to work independently</li> <li>• Experience in engineering design</li> </ul>	
Additional Online Resource(s):		

NSF REU Students must have completed at least two semesters of engineering studies prior to the proposed summer research, and they must have at least one semester remaining before they can earn their BS in Engineering.