	Back home   Bookmark   Start page   Site ma	р
Services	Nano propellers pump with proper chemistry	Qu
Free postcards	TheAllINeed.com	l re
Online games User's forum	(NC&T/UIC) Now chemists at the University of Illinois at Chicago have	a t witł
Free wallpapers	created a theoretical blueprint for assembling a nanoscale propeller with molecule-sized blades.	una
NEW		per
News	The work is featured in Research Highlights in the July 12 issue of <u>Polymorphism Experts</u>	l nc
US	Nature and was described in the Salt, cocrystal, polymorph screens	to I
World	June 28 cover story of Physical FDA experience, cGMP compliant	kinc
Art & culture	Review Letters. ssci-inc.com	acc like
Companies NGO's	Using classical molecular dynamics	me
Sports	simulations, Petr Král, assistant	Grc
	professor of chemistry at UIC, and Medical Software Experts	
Channels	his laboratory coworkers were able to Full Spectrum Software, compliant	l c this
Home & Family	study realistic conditions in this software engineering and testing microscopic environment to learn www.FullSpectrumSoftware.com	tele
Family Health	how the tiny propellers pump liquids.	me
Home		falli
Kitchen	While previous research has looked at how molecular devices rotate in flowing gases, Král and his group are	Мо
Self help	the first to look at molecular propeller pumping of liquids, notably water and	l lo
Women	oils.	con
Leisure		trai
Entertainment	"We want to see what happens when the propellers get to the scale where it's impossible to reduce the size of the blades any more," said Král.	you ma
Holidays		(En
Travel	Král's group found that at the molecular level unlike at the macro	
Technology	level the chemistry of the propeller's blades and their sensitivity to water	
Computers Freeware	play a big role in determining whether the propeller pumps efficiently or just	Wri
Personal tech	spins with little effect. If the blades have a hydrophobic, or water-repelling	lf
Webmastering	nature, they pump a lot of water. But if they are hydrophilic water-attracting they become clogged with water molecules and pump	writ to
Business	poorly.	arti
Business		at
Money & Finance	"Pumping rates and efficiencies in the hydrophilic and hydrophobic forms	The
Real estate	can differ by an order of magnitude, which was not expected," he said.	just sub
Science	The UIC researchers found that propeller pumping efficiency in liquids is	
Astronomy	highly sensitive to the size, shape, chemical or biological composition of	Infc
Biology Chemistry	the blades.	Со
Ecology &	"In principle, we could even attach some biological molecules to the blades	Pri
Geology	and form a propeller that would work only if other molecules bio-compatible	Ter
Engineering	with the blades are in the pumped solution," he said.	Le
Medicine	The findings present new factors to consider in developing nanoscale	
Math & Physics	liquid-pumping machines, but Král added that such technology probably	
Paleo & Archeology	won't become reality for several years, given the difficult nature of	
	constructing such ultra-small devices.	
Site Search k	Král's laboratory studies how biological systems, like tiny flagella that move bacteria, offer clues for building motors, motile systems and other	

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PWHI Networks nanoscale devices in a hybrid environment that combines biological and inorganic chemistry.

"The 21st century will be about hybrid biological and artificial nanoscale systems and their mutual co-evolution," Král predicts. "My group alone is working on about a half-dozen such projects. I'm optimistic about such nanoscale developments."

The PRL article was co-authored by UIC chemistry graduate student Boyang Wang.

About the Author

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