



SHELL AND VIRENT ANNOUNCE COLLABORATION TO DEVELOP BIOGASOLINE

Shell and Virent Energy Systems, Inc., (Virent™) of Madison, Wisconsin USA, today announced a joint research and development effort to convert plant sugars directly into gasoline and gasoline blend components, rather than ethanol.

The collaboration could herald the availability of new biofuels that can be used at high blend rates in standard gasoline engines. This could potentially eliminate the need for specialized infrastructure, new engine designs and blending equipment.

Virent's BioForming™ platform technology uses catalysts to convert plant sugars into hydrocarbon molecules like those produced at a petroleum refinery. Traditionally, sugars have been fermented into ethanol and distilled. These new 'biogasoline' molecules have higher energy content than ethanol (or butanol) and deliver better fuel efficiency. They can be blended seamlessly to make conventional gasoline or combined with gasoline containing ethanol.

The sugars can be sourced from non-food sources like corn stover, switch grass, wheat straw and sugarcane pulp, in addition to conventional biofuel feedstock like wheat, corn and sugarcane.

The companies have so far collaborated for one year on the research. The BioForming™ technology has advanced rapidly, exceeding milestones for yield, product composition, and cost. Future efforts will focus on further improving the technology and scaling it up for larger volume commercial production.

“The technical properties of today’s biofuels pose some challenges to widespread adoption,” Dr. Graeme Sweeney, Shell Executive Vice President Future Fuels and CO₂ said. “Fuel distribution infrastructure and vehicle engines are being modified to cope but new fuels on the horizon, such as Virent’s, with characteristics similar or even superior to gasoline and diesel, are very exciting.”

Dr. Randy Cortright, Virent CTO, Co-Founder and Executive Vice President said, “Virent has proven that sugars can be converted into the same hydrocarbon mixtures of today’s gasoline blends. Our products match petroleum gasoline in functionality and performance. Virent’s unique catalytic process uses a variety of biomass-derived feedstocks to generate biogasoline at competitive costs. Our results to date fully justify accelerating commercialization of this technology.”

Royal Dutch Shell plc is incorporated in England and Wales, has its headquarters in The Hague and is listed on the London, Amsterdam and New York stock exchanges. Shell companies have operations in more than 130 countries, with businesses including: oil and gas exploration; production and marketing of liquefied natural gas and gas to liquids; marketing and shipping of oil products and chemicals; and renewable energy projects including wind, solar and biofuels. www.shell.com/aboutshell

Virent is a biofuels company commercializing an advanced biofuel technology to power today's vehicles in place of fossil fuels. Virent's patented BioForming™ process converts biomass-derived feedstocks into conventional hydrocarbon fuels and products, including gasoline, diesel, and jet fuel. The process delivers more net energy and offers a scalable, cost-effective alternative to traditional biofuel production routes. Virent has 68 employees located in a state-of-the-art catalytic biorefining development facility in Madison, Wisconsin. The technology is based on the Aqueous Phase Reforming process, which Virent has exclusively licensed from the Wisconsin Alumni Research Foundation. To learn more, visit: www.virent.com.

ENQUIRIES

Name: Shell International Media Office
Location London, UK
Contacts **Media line:** +44 (0)207 934 3505
Martin von Arronet: +31 (0)70 377 6240

Name Shell Media Office US
Location Houston, US
Contacts **Media line** +1 (713) 241-4544
Shaun Wiggins +1 (713) 241-3264
Marnie Funk +1 202 466 1422 (Washington)

Name Virent Energy Systems
Location Madison, Wisconsin, US
Contacts **Mary Blanchard** +1 (608) 237-8615

Notes to Editors

- An electronic press kit, including downloadable images, will be available from www.shell.com/virentbiofuels
- Additional Virent press kit materials and images are available at www.virent.com/News/mediakits.html
- Royal Dutch Shell plc is working to meet government mandates for biofuel and, with its experience, expertise and assets, has become the world's largest distributor of biofuels. The company is working with biofuel manufacturers to secure cost-effective supply and press for social and environmental safeguards. A constraint on the potential of conventional biofuels is that they use food crops. Shell is a leader in the development of next generation biofuels, using non-food bio materials, alternative processes and high performance fuels.