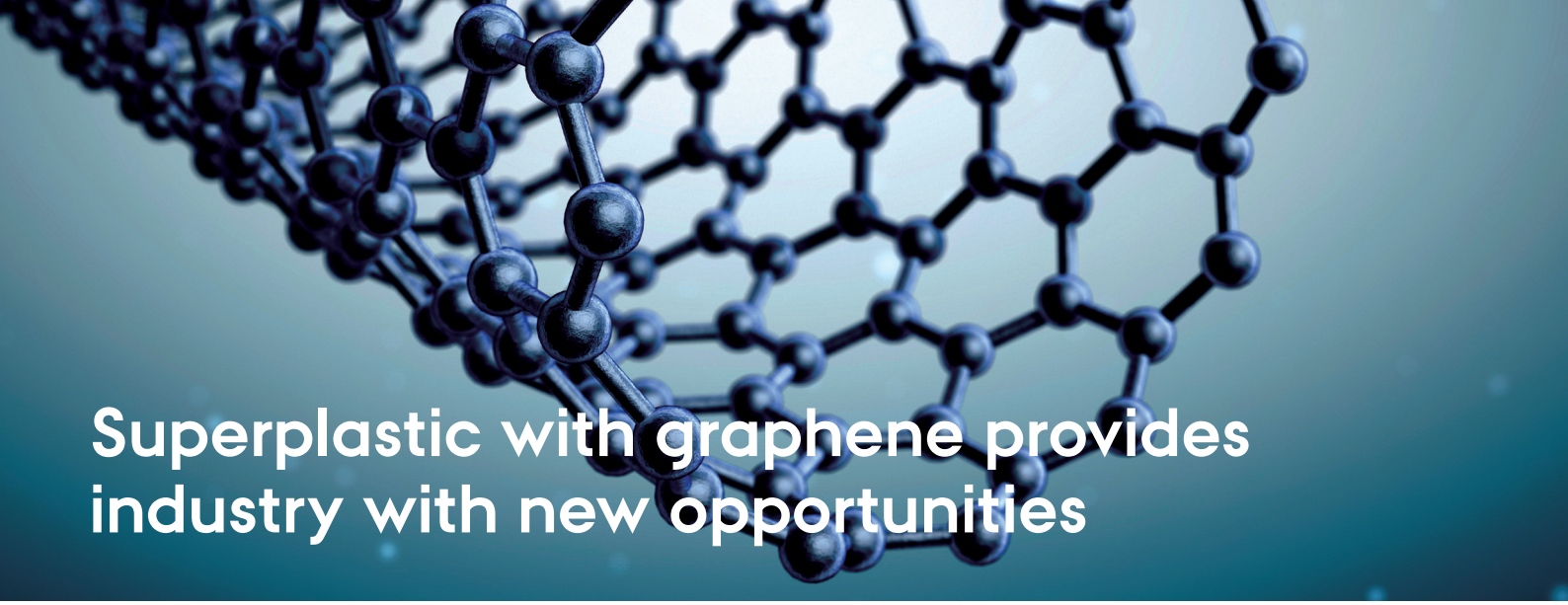

Superplastic with graphene provides industry with new opportunities

In an industrial postdoctoral project, researchers will study opportunities to develop a new form of reinforced two-component plastic with graphene.

The aim is to use a 3D printer to produce prototypes in specific shapes. The technology has great potential in the wind and plastic industries, and will be demonstrated in full-scale production.

Graphene is a single layer of carbon with some unique properties that make it the thinnest and strongest material in the world. It will now come out of the research laboratories and enter the industrial world, where researchers and companies will join forces to demonstrate the value of graphene and 3D printing in connection with developing advanced technology products.

"Graphene is a material with an enormously large theoretical potential. We'd like to investigate how to use graphene in the plastic industry to manufacture new products and develop new production processes," says Industrial Postdoctoral Fellow Bettina Brøgger Jensen.

Strong industrial collaboration

The researchers are collaborating with SP Group A/S, a major manufacturer of two-component plastic products, and Vestas Wind Systems A/S, the world's largest wind turbine manufacturer. The parties expect that the graphene-reinforced plastic will provide new options for a greatly improved starting material for use in a number of advanced technology products.

"A very important element in our strategy for product development is that we're capable of delivering unique solutions to our customers. We need to get together in the laboratory and take part in the development and testing of new materials and production methods. Combining two-component plastic with graphene and 3D printing opens up for completely new opportunities to make engineering plastics with a very modest start-up cost," says R&D Director Jens Hinke, SP Group A/S.

Vestas Wind Systems A/S must be able to continually ensure that all materials in their wind turbines have optimal conditions between properties, weight and cost, and this makes 3D printing with graphene an interesting technology.

"Until now, 3D printing hasn't been used in the wind turbine industry. We'd like to take the 3D printing process and materials with new properties out of the laboratory environment altogether and put the prototypes into full-scale production," says CTO Anders Vedel, Vestas Wind Systems A/S.

The researchers' expertise in graphene modification and production will now be taken out of the laboratory and into an industrial context.

New knowledge will form the basis for developing advanced plastic materials that will eventually provide the companies involved with a significant innovation edge.