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New Development of the iLUMiO® Visible Light Driven Photocatalyst

Sumitomo Chemical Co., Ltd. ("the Company") has unveiled for the first time in the world that PET film coated with the Company's proprietary iLUMiO® tungsten visible light driven photocatalyst is capable of inactivating goose parvovirus (GPV), which has the highest level of resistance among viruses, to a level of 1/1,000 or below in 50% tissue culture infectious dose, by exposing the virus to white LED irradiation (1,000lx) for six hours.

The demand for photocatalysts as an environmental cleanup material has recently been growing because they have desired properties such as decomposing nearby organic materials or making it difficult for dirt to adhere owing to their high oxidation effect under light exposure. At present, most photocatalysts are ultraviolet light driven photocatalysts which manifest their effects when exposed to the strong light energy of ultraviolet light. While these photocatalysts have been developed for outdoor use, recent developments have brought about visible light driven photocatalysts for indoor use, which exhibit catalytic activity also under violet and blue lights having longer wavelengths than ultraviolet light. Efforts are underway toward further improving their photocatalytic performance.

The Company has a product line of both ultraviolet light driven photocatalysts and visible light driven photocatalysts, which are used for such wide-ranging applications as building exteriors, window glass, blinds and curtains. In 2008, the Company developed the high performance tungsten visible light driven photocatalyst iLUMiO® by capitalizing on its advanced technical expertise cultivated over many years in the field of ceramics synthesis technology. iLUMiO® has a far greater sensitivity to visible light compared with earlier visible light driven photocatalysts. Among other things, iLUMiO® shows a strong antiviral effect under indoor lighting.

In its recent test, the Company coated PET film with iLUMiO® and verified its performance against GPV under six hours of exposure to white LED light (1,000lx), which is drawing attention as a next-generation light source. The GPV used in the test is a virus with resistance so great that it can withstand alcohol antiseptics, heating at 80ºC for 15 minutes, or exposure to a 2,000ppm sodium hypochlorite solution for 30

minutes. The ability of iLUMiO® to inactivate GPV suggests that iLUMiO® may be effective against many other viruses as well. While earlier visible light driven photocatalysts have been known to show indoor photocatalytic effects when exposed to even a small amount of ultraviolet light emitted by fluorescent lighting, iLUMiO® manifests antiviral properties under white LED lighting that emits no ultraviolet light whatsoever. Thus, iLUMiO® has an unprecedentedly high level of visible light sensitivity. The Company plans to use iLUMiO® to develop films which react to indoor light and decompose nearby viruses for such applications as interior materials in hospitals, nursing care facilities, schools and other public facilities, in food processing plants that require high sanitary standards, and in public transportation facilities, department stores and other commercial facilities where large numbers of people gather.

Photocatalysts represent a promising environmental technology that can be used not only for their self-cleaning, air purifying, and antibacterial properties, but also for their ability of decomposing toxic materials or preventing food poisoning and communicable diseases. The Company is working to develop photocatalysts for indoor as well as outdoor use by further improving the properties of photocatalysts, especially for those indoor applications where demand is projected to increase much, as it pursues vigorous business development to seize the growing market demand.