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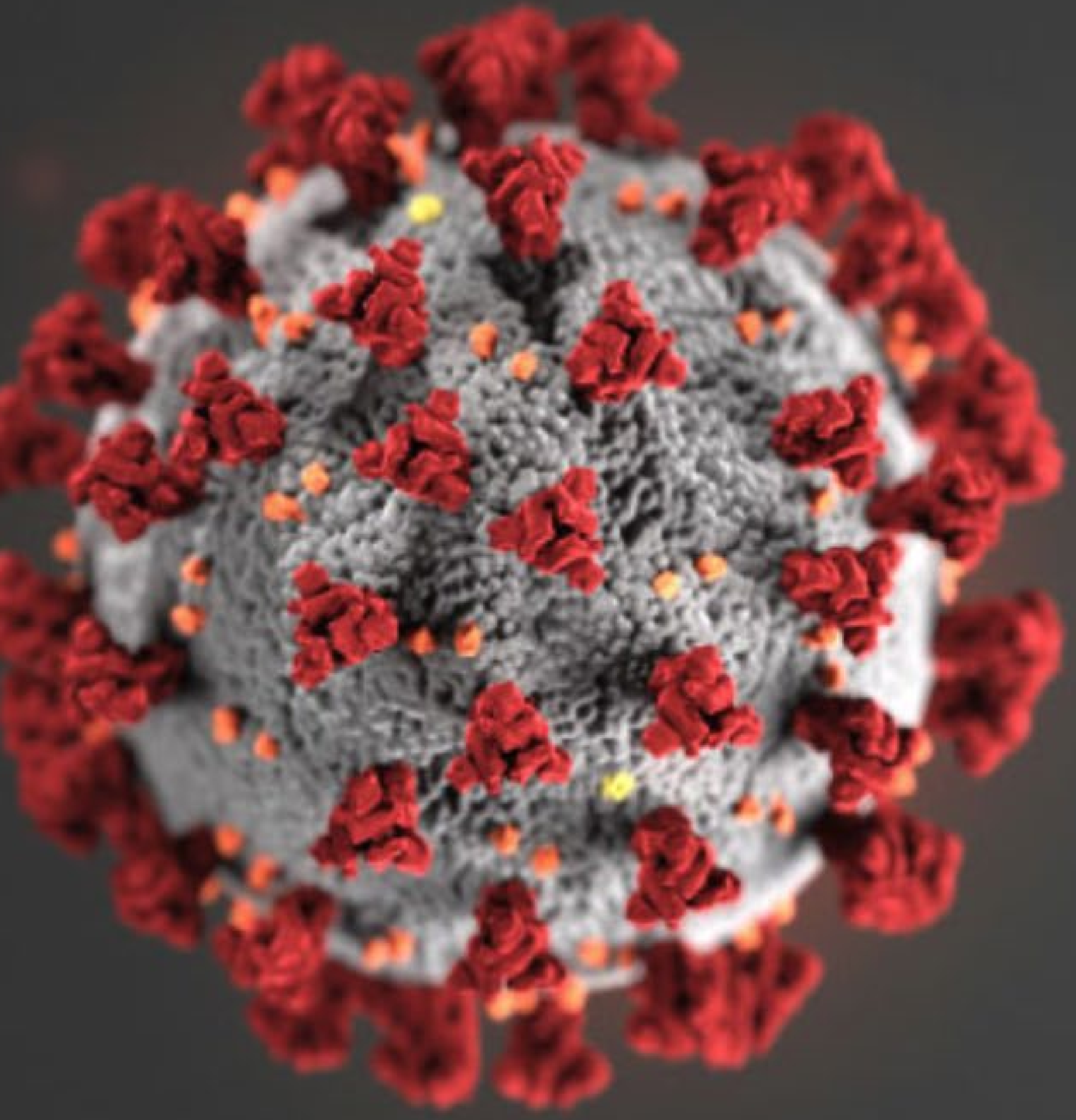
Corona virus Impact

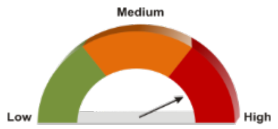
Assessment – Industrial Manufacturing and Durables Industry

April 2020



Summary – Industry level Impact – Industrial Manufacturing Durables (1/2)

Globally COVID-19 is affecting 203 countries with 938,565 cases registered. US, Italy, Spain, China, Germany, France, Iran, etc. are the countries significantly impacted by Corona virus. Majority of these countries have been locked down and all manufacturing industries have temporarily shutdown as per government directives.



Categories	Key Processes / Products Involved	Dominant Supply Bases Impacted by COVID-19	Insights	Impact Level (High / Medium/ Low)		
Mechanical	Castings, Forgings, Metal Fabrication, Machining, Injection Molding, etc.	China, US, India, Germany, Japan, South Korea, Italy, etc.	• Factory shut downs has been witnessed in both end use OEMs and mechanical service providers who are tier 1 and 2 suppliers for industries such as automotive, building & construction, electrical & electronics, aerospace & defense, medical / healthcare, etc. • Consequently, alternative sourcing locations, supply negotiations with incumbent / alternative suppliers , lookout for domestic / regional suppliers, increasing inventory thresholds, etc. are the potential counter measures for buyers in the end use industries	**H**	M	L
Electrical	Transformers, Switchgears, DC Motors, Industrial Motors, etc.	China, US, India, Germany, Japan, South Korea, Italy, etc.	• COVID-19 outbreak has resulted in an extended hold on the delivery of critical transmission equipment's such as Transformers, Switchgears etc. from vendors and manufacturers in the affected countries globally. • Current situation has resulted in standstill situation for most of industries which resulted in sluggish demand for electrical motors such as industrial motors . • Power Utilities and other industrial segment are utilizing existing equipment in stock and reaching out to alternate suppliers in regions having minimal impact due to COVID-19, so as to mitigate the impact of the disease on project deadlines and its overall effect on power transmission operations.	**H**	M	L
Electronics	Semiconductors, Passives, Electromechanical, Electronic Products	Italy, Philippines, France, India, US, Mexico, Malaysia, Vietnam	• Passive component manufacturing bases like Philippines, Malaysia and Indonesia has witnessed significant impact with temporary plant closures and logistic shutdown which is partially compensated by reopened plants in China, South Korea and minimal closedowns in Japan. • Similarly, semiconductor back-end packaging and testing in Malaysia and Vietnam has also witnessed temporary shutdowns which is partially compensated by backend packaging in China. India, US, Vietnam and Mexico witnesses factory lockdown for product manufacturing especially 5G and smart phones. This may result in stretching the 5G implementation which was expected to start in Q2 and Q3 2020.	H	**M**	L

Industry / Supplier Updates

- Daimler has started partial operations in its Chinese plants in late March 2020.
- Volvo cars have reportedly started operations in four of their manufacturing plants in China during 3rd week of March 2020.
- As of March 18, 2020, Honda, GM, Ford and Fiat Chrysler have decided to shut down their plants in the US in-order to help reduce the spread of COVID-19.
- Honeywell Automation India has suspended its manufacturing operations across the country as of last week of March, 2020.
- ThyssenKrupp Elevators has reportedly halted operations in its German plant for a period of 14 days ending March 30, 2020, as a precautionary measure, followed by work from home in April, 2020.
- In March 25, 2020 Larsen and Toubro suspended operations in its heavy-engineering and switchgear manufacturing facilities in Powai (Mumbai), Vadodara and Hazira in India.

Summary – Industry level Impact – Industrial Manufacturing Durables (2/2)

Key Industry Risk Factors

Industry Risk Factors	Mechanical Components Impact		Electrical Components Impact		Electronic Components Impact	
Raw Material Supply	• Potential shortage in supply of raw materials expected for consumers highly dependent on a single source • Impact expected to be minimal for users relying on multiple sources for sourcing of raw materials • Key raw materials include Carbon Steel, Stainless Steel, Aluminum etc.	L **M** H	• Potential shortage in supply of raw materials expected for consumers highly dependent on a single source • Impact expected to be minimal for users relying on multiple sources for sourcing of raw materials • Key raw materials include Carbon Steel, Electrical Steel, Copper etc.	L **M** H	• Semiconductor Wafers and Chemical shortage is minimal due to availability of sources from China, South Korea, Japan for electronic component manufacturing • Electronic component shortage is slightly rising especially at passives and IC packaging.	**L** M H
Labor Unavailability	• Globally many countries have been locked down and even in countries which are still partially operating have been facing labor unavailability issues. • Operating with temporary/ contract labor is highly challenging as these industries require high skilled workforce.	L M **H**	• Industries manufacturing electrical equipment like transformers, motors are highly dependant on labor force, global pandemic has critically affected its workforce to greater extend. • Many industries have suspended their operation due to Covid-19 and unavailability labor	L M **H**	• The global pandemic has affected the overall labor return rate however, for component manufacturing, labor requirement is comparatively minimal due to automation • For product manufacturing, labor return rate is critical as assembly side is more labor intensive.	**L** M H
Lead times and Logistics	• Factory shutdowns, travel restrictions and disruption in input material / component supply are expected to cause significant delay in lead times for existing and upcoming order deliveries. • Governments of less impacted countries such as Turkey, Argentina, Brazil, etc. have also restricted exports / trade transactions.	L M **H**	• Unavailability of labor force, lack of raw materials, production suspension, availability of supplier has caused significant impact in lead times. • In the account of corona virus, governments across the world has restricted their trade between countries	L M **H**	• Lead times have started extending for key components like MLCC, Electrolytic Capacitors, Resistors, Memory, logic devices up to 3 weeks • Lead-times for Smartphone's, routers, telecom products, personal and home care products would extend due to assembly line shutdown across EMS and OEMs	L **M** H
Price Volatility	• The supply demand gap is expected to remain low as operations in both end use and the supplier side have been affected, thereby leading to relatively low price volatility. • However, procurement from alternative sources could potentially lead to hikes in both component prices and logistics cost.	**L** M H	The supply demand gap is expected to remain low as: • Utilities have witnessed a significant drop in electricity demand offset by factory shutdown • Operations in end use and the supplier side have been affected, thereby leading to relatively low price volatility.	**L** M H	• The supply demand gap is low as both the supplier production and end-use EMS/OEMs demand is affected which resulted in limited price volatility. • Additionally, more closedowns in south east Asian nations may impact price during Q2 especially for MLCC and resistors.	**L** M H

Industry / Supplier Updates

- ABB has resumed its Chinese operation in three production facilities in late March, however there will be decline in their Q1 2020 revenue as other part of world is severely impacted by Covid-19
- Murata, Samsung Electronics, and Taiyo Yuden have temporarily closed their factories in the Philippines considering the suspension of logistics and Volcanic eruption in Philippines.
- Global EMS suppliers like Foxconn and Wistron with factories in India have temporarily suspended their production in India.
- Vishay facilities worldwide remain fully operational except in countries like France, Italy, Dominican Republic, Philippines, Malaysia and India where there is a significant level of manufacturing disruptions.

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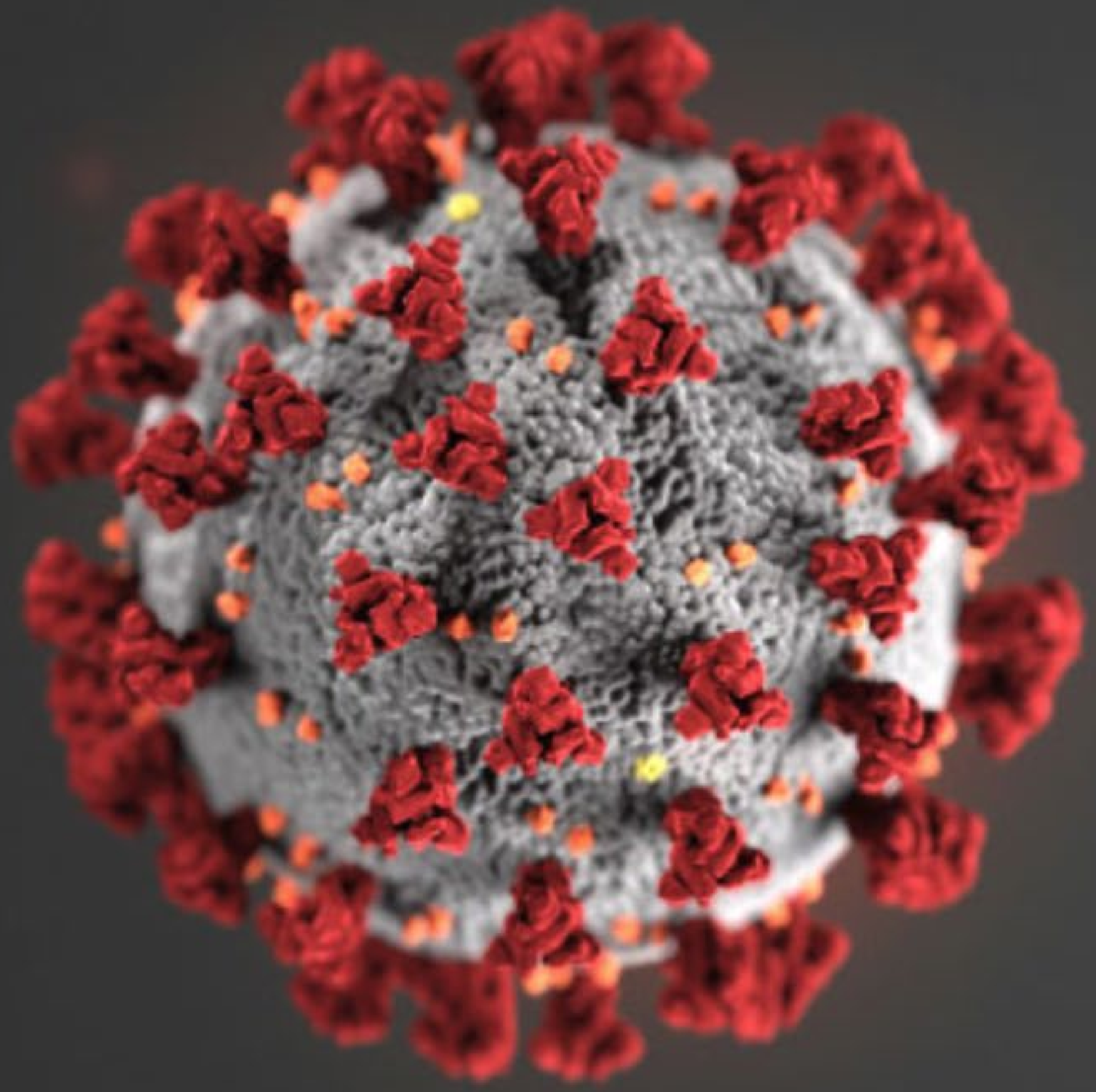

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