

Electroless nickel-phosphorus coatings are ~~widely used widely~~ in many ~~of the~~ industrial applications because ~~of their~~ unique properties, ~~including of such as being~~ highly wear resistant ~~and high~~ corrosion resistant ~~and being highly very~~ hard and tough ~~property as well as, and a~~ good lubricant ~~tion~~. ~~By a~~ functional nanometer composite coating is produced by an electroless codeposition process that ~~combines~~ nano-sized particles as a reinforcing phase ~~inside within of a the~~ Ni-P matrix, ~~to obtain~~ functional nanometer composite coating with ~~electronless co-deposition processes,~~ the ~~combined~~ properties of ~~the~~ Ni-P coating are ~~to be~~ mainly improvements, ~~but~~ and sometimes ~~different~~ nanoparticles ~~new features~~ are fully added to ~~enhance~~ the coating performance ~~by the combination of~~ their totally new features. ~~For this purpose, or instance,~~ different nanoparticles ~~like such as~~ nano-SiC, WC, Al₂O₃, TiO₂, and ZnO ~~increase as hardneser particles in the coatings,~~ and nanoparticles such as ~~polytetrafluoroethylene (PTFE), MoS₂, and graphite~~ ~~as increase~~ lubrication ~~particles are added for the~~ coatings. ~~out o~~f these nanoparticles, PTFE has ~~got aroused~~ tremendous interest ~~by due to~~ its properties, ~~like including its low surface energy and~~ lower friction coefficient, ~~(good being for non-stickerstick surfaces or and;~~ dry lubricants ~~ty,~~ its anti-fouling properties, and ~~very its~~ good wear and corrosion resistance. ~~Ni-P-PTFE can be used as an anti-sticking coating. Condensed~~ The condensed fluorine atoms in these molecules ~~at in~~ the outer layer are the main ~~cause source~~ of the physical properties of PTFE ~~polymer like such as~~ its low surface energy (18.6 mN/m) and ~~very its~~ remarkably lower friction coefficient, ~~both excellent properties for anti-stick coatings~~. By co-deposition of PTFE in the matrix of the coating, the properties of ~~both~~ Ni-P and PTFE can be used simultaneously. ~~PTFE has excellent anti-stick properties due to the low surface energy of PTFE polymer (18.6mN/m).~~ The ~~refore another~~ potential application of a Ni-P-PTFE ~~composite is to~~ the reduction ~~for of~~ fouling. ~~For example, is foreseen as a solution to the serious problem of~~ the formation of ~~deposits resembling~~ limestone ~~with on~~ the surfaces of heat-exchange exchangers ~~or heat-exchange elements is a serious problem~~. These sediments are one of the ~~natures inherent~~ problems ~~in~~ the designation and operation of many ~~types of~~ production ~~and processing~~ equipments ~~and processes~~. ~~Unasked for~~ These ~~unwanted~~ sediments can affect ~~the~~ equipment in two ways ~~are~~:

Comment [A1]: In the passive voice, adverbs of manner are generally placed between the helping and main verbs or after the verb phrase. For example, The heart tissue was carefully examined to The heart tissue was examined carefully.

Comment [A2]: Usually, an abbreviation needs to be spelled out once in the Abstract, again in the main text, and used consistently thereafter.

Comment [A3]: To use the colon correctly, you must make sure that the sentence that comes before the colon is a complete, grammatical sentence.

- The lower thermal conductivity of the ~~formed-deposited~~ sediments can increase heat-transfer resistance ~~for heat transfer, and~~ ~~thereby~~ ~~fore~~ reducinges the heat-exchanger efficiency ~~of heat-exchanging exchangers~~.
- Fouling the ducts reduces the cross-sectional al area of the fluid path, causing ~~-and~~ ~~the~~ increased friction ~~becomes higher, causing to an increase of~~ and a pressure drop across the system.

~~Any m~~ Methods for reducing such ~~sediments~~ sedimentary build-up can decrease ing costs. ~~It was~~ We found that the adhesion of ~~the formed~~ such sediments on ~~the~~ surfaces with low surface energy is poor. For this purpose reason, many polymeric coatings have been used. ~~The~~ Lower thermal conductivity, and low wear resistance as well as ~~and~~ poor adhesion ~~of to~~ the substrate of the conventional polymer coatings have limited their industrial applications. ~~Since~~ Because Ni-P-PTFE coating is metallie based on a metallic composite, its thermal conductivity, mechanical strength, and wear resistant properties are much bigger better than PTFE coatings, ~~while~~ ~~and~~ it also has a a less low friction coefficient and low surface energy.

Comment [A4]: Redundant phrases make a sentence wordy. Being economical in writing enhances clarity (in terms of meaning) and readability of the sentence.