Sintesis ligan para di 2 1 methyl 3 pyridyl 4 5 dihydro 1h pyrazol 5 yl benzena sebagai sensor ion logam pb 2 = Synthesis of para di 2 1 methyl 3 pyridyl 4 5 dihydro 1h pyrazol 5 yl benzene ligand as sensor for pb 2 metal ions / Tirta Angen Pangestu

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Abstrak

[Ligan para-di-2-(1-methyl-3-pyridyl-4,5-dihydro-1H-pyrazol-5-yl)benzena sudah berhasil disintesis melalui metode kondensasi Aldol. Hasil yang diperoleh dikarakterisasi menggunakanspektrofotometer UV-Vis, spektrofotometer inframerah dan spektrometer NMR. Aplikasi ligan ini adalah sebagai Sensor ion logam Pb2+dan dilakukan menggunakan spektrometer UV-Vis. Hasil dari studi sensor menunjukkan bahwa ligan mempunyai intensitas absorbansi yang kuat. Hal ini didukung oleh nilai absorptivitas molar (?) yang besar. Studi spektroskopi UV-Vis pada penambahan ion Pb2+ menunjukkan munculnya puncak baru pada daerah panjang gelombang 290 nm. Hal ini menunjukkan adanya pembentukan kompleks antara ion logam (Pb2+) dengan ligan para-di-2-(1-methyl-3-pyridyl-4,5-dihydro-1H-pyrazol-5-yl)benzena. Studi aplikasi sensor menunjukkan bahwa ligan ini dapat dijadikan sensoruntuk ion Pb2+ karena penambahan ion ini menyebabkan penurunan intensitas serapan absorbansi. Hasil studi efektivitas sensor menunjukkan bahwa ligan para-di-2-(1-methyl-3-pyridyl-4,5-dihydro-1H-pyrazol-5-yl)benzena merupakan sensor yang efektif terhadap penambahan ion Pb2+ pada panjang gelombang maksimum (?maks) 291 nm.

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The Ligand para-di-2-(1-methyl-3-pyridyl-4,5-dihydro-1H-pyrazol-5-yl)benzene has been synthesized well by using Aldol condensation method. The result of synthesizing is characterized byUV-Visible spectrophotometer, Infrared spectrophotometer and NMR spectrometer. The application of this ligand as sensor for Pb2+ metal ions was studied by using UV-Visible spectrophotometer. Sensingstudiesindicatethat theligandhas astrongabsorbans intensity. This is supportedby alarge molarabsorptivity (?) value. UV-Vis spectroscopystudiesonthe addition ofPb2+ ions showedthe emergence ofa newpeakat290nmwavelength region. This indicatesthat thecomplexesformedbetweenmetalions(Pb2+) with para-di-2-(1-methyl-3-pyridyl-4,5-dihydro-1H-pyrazol-5-yl)benzene ligand. Application sensor studies showed that theseligandscanbe used assensorforPb2+ionsdue tothe addition oftheseionscauses a quenched inabsorbans intensity. The results ofthe study ofsensor efectivity showedthattheligandpara-di-2-(1-methyl-3-pyridyl-4,5-dihydro-1H-pyrazol-5-yl)benzeneissensorefectiveaddition ofPb2+ionsat themaximumwavelength(?max) 291 nm., 5he 1igand para-di-%-+!-rnethyl-(-pyridyl-*,3-dihydro-!:-pyra<ol-3-yl/ben<ene
has been synthesi<ed well by using Aldol condensation rnethod. 5he result o2
synthesi<ing is characteri<ed by .>->isible spectrophotorneter,)n2rared
spectrophotorneter and NM? spectrorneter. 5he application o2 this ligand as
sensor 2or Pb%= rnetal ions was studied by using .>->isible spectrophotorneter.
Sensing studies indicate that the ligand has a strong absorbans intensity. 5his is
supported by a large rnolar absorpti$ity +@/ $alue. .>->is spectroscopy studies on
the addition o2 Pb%= ions showed the ernergence o2 a new peak at %A7 nrn
wa$elength region. 5his indicates that the cornpleCes 2orrned between rnetal ions

+Pb%=/ with para-di-%-+!-rnethyl-(-pyridyl-*,3-dihydro-!:-pyra<ol-3-yl/ben<ene ligand. Application sensor studies showed that these ligands can be used as sensor 2or Pb%= ions due to the addition o2 these ions causes a Duenched in absorbans intensity. 5he results o2 the study o2 sensor e2ecti$ity showed that the ligand paradi-%-+!-rnethyl-(-pyridyl-*,3-dihydro-!:-pyra<ol-3-yl/ben<ene is sensor e2ecti$e addition o2 Pb%= ions at the rnaCirnurn wa$elength +BrnaC/ %A! nrn.]