The manuscript displays results on classical hydrodechlorination reaction using Pd-Pt catalysts supported on carbon and $CHFCl_2$ (HCFC-22) as the substrate. The discussion focuses mainly on the synergy effect between both metals and the importance of electronic transfer in corresponding nanoparticles. This is a well covered topic since 40 years, therefore, presentation and discussion of new results must display high scientific quality and presentation; moreover the manuscript must be carefully read before submission. This is not the case here and the manuscript cannot be accepted in the present form.

Main Text. Title and manuscript are very long with redundant information and must be shortened. Few examples: the two last sentences in abstract (lines 29-32) repeat the same information; part between lines 261 and 268 has no place in discussion and could be shortened and shifted in introduction; part in lines 269-273 is redundant with introduction; lines 327 to 331 are redundant with introduction.

References. The numerous references (101) are not balanced (40 % cover the period before 2000, 40 % 2001-2010 and only 20 % after 2011) and too frequently not in line with text and must be deleted. Illustrative examples:

- line 38-39: "Among these catalysts, carbon-supported bimetallic Pd–Pt catalysts play an important role. They are commonly used for hydrogenation reactions in the fine chemical industry [1]" => Ref. 1 mentions monometallic Pd/C;
- line 42 "Hydrogenation of aromatic [6]" => ref. 6 in line 501: Hydrogenolysis of hydroxymatairesol;
- line 43 "catalytic oxidation of sulfur dioxide in exhaust gas treatment [7]" => ref. 7 in line 503: Sulfur poisoning and regeneration of bimetallic Pd-Pt methane oxidation catalyst);
- line 73 "CHClF2 hydrodechlorination….[28-37] => line 553, CCl2F2 in ref. 28; line 555, CCl2F2 and CH2F2 in ref. 29; line 560, CCl2F2 in ref. 31;
- line 104: "observed in CCl2F2 and CHClF2 hydrodechlorinations [36,46,47]" => lines 600, 602, no CHClF2 in ref. 46, 47;
- line 267: "… and GWP (Global Warming Potential) values [71-79]" => ref. 71 to 79 are rather old and of limited interest in the context;
- line 331: "The electron deficiency of Pt after alloying with Pd has been documented by others [81-84]" => ref. 83 and 84 are old, thus decreasing the interest of the discussion)

Accuracy. Complete information about data accuracy is missing. Table 1 displays particle size values with up to 4 significant figures, i.e. far away from real accuracy of such data, but corresponding esd (estimated standard deviation) are missing; thus, discussion based on theses data are not supported; moreover, the authors write later "therefore the average metal particle sizes are subjected to rather large errors" (Line 207); or "Averaged values from a few measurements" (line 301): what does mean "few measurements"?

XPS results. The survey spectra are missing as well as the C1s windows; they could be added to the SM part. The discussion about the presence of zerovalent and electrodeficient Pd and Pt species does not take into account the possibility of carbide formation with the metallic atoms at the particle

surface. Moreover, the full Pt4f profiles in figure 6 are very similar and it is not clear why the authors choose to decompose some profiles using four components (i. e. with presence of electro-deficient Pt) and other using only two components (i.e. only metallic Pt).

Supplementary material (obtained upon request): the document displays three **Set** (**xSM** containing figures without number) and three **Fig.** (**ySM**); this is rather confusing. The figure captions of the figures attached to Set 2SM and Set 3SM are missing; thus it is very difficult to follow the discussion. Set 2SM: the XRD profiles in second figure are not identified; the quality of the pdf cards is poor and the text is not readable. Set 3SM has no call in text; XRD of sample Pd100(acac) is missing. Therefore, the discussion in main text and in SM is not supported. The authors have to improve strongly the quality of the SM for the reader.

Catalytic results. This is an important part of the manuscript and I appreciate the effort done by the authors to calculate and present TOF values in Table 3 and 4 and Figure 9; thus they are able to compare a real catalytic activity. I suggest to supplement these results by a comparison with pertinent literature data; this will be beneficial for the reader.

Missing data. Samples Pd20Pt80(acac) and Pd20Pt80(Cl) would very useful to complete the discussion.

Miscellaneous mistakes and remarks

- Line 92: Also, Garcia et al. [**43]** => Also, Garcia et al. [42]
- Line 110: (step included in catalyst preparation, **see 2.1.**) => (step included in catalyst preparation, see 3.1.)
- Line 163: (Supplementary Material, **SET 1SM**) => (Supplementary Material, SET 2SM)
- Line 256: series of **Pd-Pd/C** catalysts => series of Pd-Pt/C catalysts
- Line 288: organic **acetyloacetonate** residues => organic acetylacetonate residues
- Figure 3: the x range between 10 and 30 ° 2 theta is missing.
- Table 1. The acronyms SD and SE are not defined
- Figures 4, 5: the particle size scale is not uniform
- Figure 8: part D indicated in caption is missing.
- Missing data : samples Pd20Pt80(acac) and Pd20Pt80(Cl) would very useful to complete the discussion.

In conclusion, I recommand rejection. The authors have to follow the above comments and remarks to prepare an improved manuscript with a clear discussion, to read it very carefully and to resubmit it.